«The A to Z Collection» n°5

THE WHITE BOOK ON HYPERTENSION

A complete guide on hypertension

by Uwe Diegel

medactiv
transforming lives

THE WHITE BOOK ON

Hypertension

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About the author

Uwe Diegel (born 1965 in New Zealand), is a specialist in various forms of medical diagnostics such as blood pressure, temperature, asthma and diabetes. He is the holder of several patents relating to temperature and blood pressure measurement.

After studying music in Canada and in South Africa, he performed worldwide as a concert pianist for several years. In 1989 he changed his career due to an injury to his right arm. In 1992 he entered the world of medical diagnostics, quickly developing a particular interest in cardiovascular diagnostics.

His intense scientific curiosity has led him not only to develop new technologies in this field, but also to interest himself to field of medical manufacturing, industrial design and problems faced by Chinese manufacturing concerns.

Uwe lives in Paris, France, where he runs HealthWorks Global and does fundamental research in blood pressure diagnostics. He is today considered to be a foremost expert in the field of blood pressure management and in the manufacturing of medical diagnostics devices.

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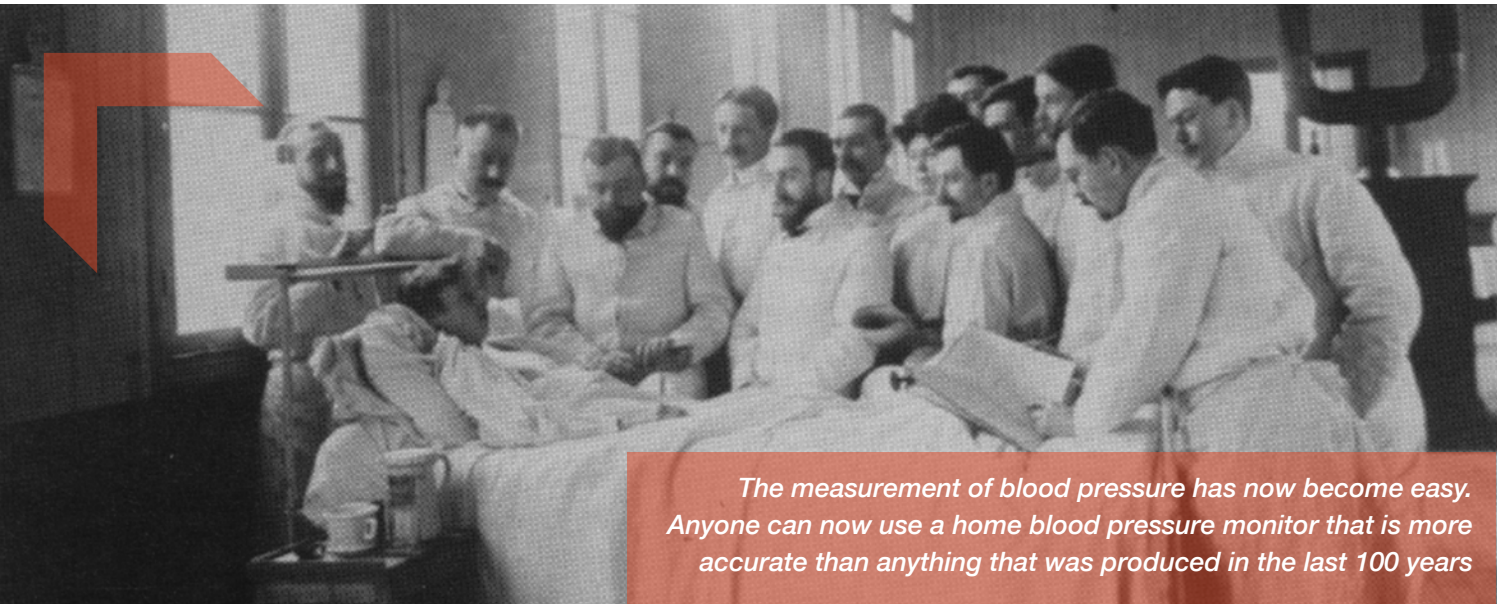
It is Marcel Proust who said that "the real voyage of discovery consists not in seeking new landscapes, but in looking at things with new eyes". I hope that when you read this booklet, it will give you a new vision of blood pressure, how it works, and how you can take responsibility for your health in a sustainable way.

There are many misconceptions about blood pressure, and quite often things that seem completely obvious to your doctor are a complete mystery to you. However, because your doctor assumes that you understand things in the same way as he does, he does not explain them to you and you go home after your consultation feeling frustrated about the lack of information.

These questions and answers on blood pressure have been developed by MedActiv together with a team of international medical specialists and consultants. They are the result of thousands of hours working with patients, organizations and doctors. Over the years, we have received thousands of questions and we have tried to answer them as well as we could. We try to keep up to date with international changes in opinion, diagnosis or policy. We take the utmost care in trying to provide you with information that is factual and up to date. If you have any comments or suggestions or any question about blood pressure that you think should be answered, we would love to get your feedback or suggestions so that we can improve this book and learn from your experience. To send us feedback, please logon to our Facebook page (https://www.facebook.com/MedActiv/ (don't forget to like us)) or visit us on www.medactiv.com.



The measurement of blood pressure has now become easy. Anyone can now use a home blood pressure monitor that is more accurate than anything that was produced in the last 100 years

At the beginning of the last century, the measurement of arterial pressure is not yet current. On this cliché taken at the Hôpital de la Charité in Paris in 1910, Henri Vaquez measures the systolic blood pressure of a patient. Carried out by the head of cardiology himself, the gesture is delicate and photogenic.
The moment is not yet banal...

A few basics about blood pressure

We will start by giving you a few undeniable facts and rules about blood pressure monitors. These rules are very important but are often forgotten. They will be mentioned again further in this document, but are worth repeating here.

Rule 1: Your digital blood pressure monitor does not magically transform you into a doctor.

Your blood pressure monitor is probably really easy to use. It inflates automatically, makes cool sounds and then, incredibly, gives you a clinically accurate result. Isn't that great? It's child's play to measure your blood pressure... Well it certainly feels like it... However, **your blood pressure monitor is not intended to replace regular medical examinations.** It is there to be used together with your doctor as a tool to better manage your blood pressure. Only a physician is qualified to interpret changes in your blood pressure.

Rule 2: When in doubt, ask your doctor for advice.

The first commercially useable blood pressure monitor was manufactured at the turn of the century. In the 70ies digital devices made their appearance and by the 90ies they were commonly available to the public. According to the statistics from our various service departments worldwide, an incredible 92% of all "faulty" devices sent back to manufacturers show absolutely no problem at all and are simply badly used. Faults can range from silly mistakes such as batteries being put in upside down to using the wrong size cuffs. We have even received devices where the batteries were still wrapped up in plastic. Your doctor has been working and studying blood pressure for most of his life and is an expert on the subject. Please ask him to show you how to correctly use your monitor.

Rule 3: Never make adjustments to your medication unless you are advised to do so by your physician.

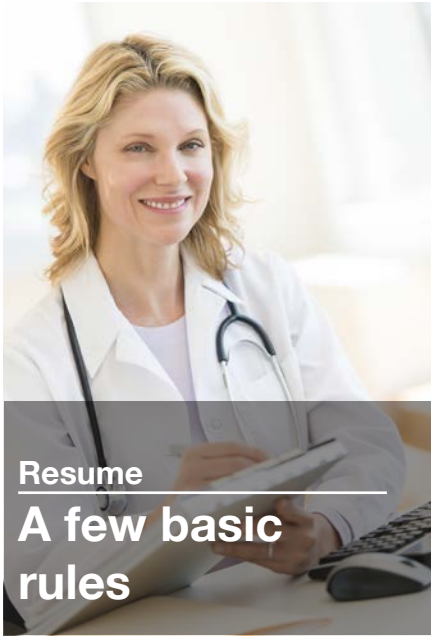
As mentioned earlier, your blood pressure monitor does not replace a regular medical examination. Your doctor has prescribed medication for you after a careful examination and it can be very dangerous to make your blood pressure fluctuate by changing your medication or by reducing the dosage on your own. If you suspect that your blood pressure medication is wrong because you regularly get low or high blood pressure readings on your device at home, please keep a regular record of your blood pressure for at least three days in a row and then contact your doctor. He will appreciate the

Blood pressure in a variable parameter so it is normal for you to get different blood pressure readings at home than from the doctor

fact that you present all the evidence to him in a clear format. To do so, use a **Blood Pressure Passport** or a connected device that is linked to your smartphone. There is a multitude of **Blood Pressure Passports** available out there. Most manufacturers of blood pressure monitors or Heart Foundations offer them as a free download.

You should know that when the blood pressure is measured by the doctor at his office, there is a multitude of reasons why the blood pressure as measured by the doctor might be higher or lower than the one measured at home. One of the most common reasons is what is called "**White Coat Hypertension**" and occurs when the patient is subconsciously nervous at the medical examination and this makes his blood pressure go up. On average, the systolic pressure will vary by about 30 points during the day, so it is normal for you to have a different blood pressure at home than at the doctor.

This is one of the main advantages of home monitoring, in that it gives you a much better overall picture of your blood pressure over time than the single blood pressure reading that is taken at the doctor's office.



1. Your digital blood pressure monitor does not magically transform you into a doctor.
2. When in doubt, ask your doctor for advice.
3. Never Make Adjustments To Your Medication Unless You Are Advised To Do So By Your Physician.
4. Digital Blood Pressure Monitors Are For Adults.
5. Do not believe in urban legends when it comes to your health

Rule 4: Digital blood pressure monitors are for adults.

There are two main obvious reasons why children should not use digital blood pressure monitors. The most important one is that it is sometimes very difficult to find a cuff that is of the correct size for a child. The second reason is much more subjective, but is as important as the first. When you measure blood pressure, the cuff has to be inflated to 30 or 40 points higher than the systolic pressure and this can prove to be quite uncomfortable for children, especially infants who cannot express themselves. Often, as a result of this, they move their arm or cry or get stressed, and this negates any diagnostic value of the reading. Children should not use a digital blood pressure monitor unless it is under the strict supervision of an adult.
Another reason why children should not use automatic blood pressure monitors is that the amplitude of the pulse waves generated by a child is very small (an infant has less than half a litre of blood in his body so by definition his blood pressure is quite low) and more often than not an oscillometric (digital) blood pressure monitor will not "hear" the first "Korotkov" sound from which the blood pressure is calculated and will thus give an artificially low result for the blood pressure.

Rule 5: Do not believe in urban legends or marketing hype when it comes to your health.

When making decisions about your health, question what is commonly believed. There are many "urban legends" about blood pressure, such as salt intake, anti-oxidants in grape seeds and drinking alcohol every day is good for the heart. Although there might be a grain a truth to these kinds of stories, they are not necessarily completely true and are certainly misunderstood.

"And now here is my secret, a very simple secret: It is only with the heart that one can see rightly; what is essential is invisible to the eye."

Antoine de Saint-Exupéry, The Little Prince

So what is blood pressure?

Blood pressure is the measure of the force that the blood exerts on the inside walls of your arteries.

Blood pressure is expressed as a ratio (ex 120/80). The first number is called the systolic pressure, and is the pressure in the heart when it is beating. The second number is the diastolic pressure, and is the pressure in the heart when it is resting (between beats). Blood pressure is historically expressed in mmHg, or millimetres of mercury, even though there is no longer any mercury used in electronic devices. It is interesting to note that in most french speaking countries, blood pressure is expressed cmHg, or centimetres of mercury, which means that the doctor would express your blood pressure as 12/8 (twelve over eight) instead of 120/80.

It is also interesting to note that most doctors use rounded figures for blood pressure and will use the number 120/80 for any value considered as being in the normal range, so instead of telling you that your blood pressure is 134 over 76, he will just tell you that you are 120 over 80. **One could**

Blood pressure made simple

almost say that 120/80 is a generic number for normal blood pressure.

We have noticed over the years that this is often a cause of complaints from patients who do not understand that the doctor is using this number (120/80) as a reference only. Over the past 15 years, we have received hundreds of letters from patients telling us that they think that their device is inaccurate. An example is Patient X who states that she would like a refund on her blood pressure monitor because "*it is giving me a result of 133 over 84 and my doctor told me that I was 120 over 80*". In fact the result of 133/84 of Patient X is much more accurate than the doctor's estimation, but it is of no medical consequence because both results are perfectly normal. In this case, the doctor of Patient X just gave her the "generic" figure for a normal blood pressure, which is 120/80.

When the blood pressure is measured, it should ideally fall within a specific range. Knowledge of this range and of your blood pressure should allow you to better manage your health.

In general, it is better to have a lower blood pressure than a high one. With high blood pressure, the heart works harder, your arteries get damaged and your chances of a stroke, heart attack, or kidney problems are greater.

Your blood pressure fluctuates greatly in the course of a day. Many factors, such as exercise, conversation, alcohol, stress, movement, food or smoking can cause your blood pressure to rise and fall temporarily. This is why it is important to always measure and record your blood pressure **at the same time** and **under the same conditions** every day and to be completely relaxed when you measure your blood pressure.

Range	Systolic pressure	Diastolic pressure	Suggested action	
Hypotention	<100	<60	Medical control	
Normal blood pressure	100 - 140	60 - 90	Personal control	
Mild hypertension	140 - 160	90 - 100	Medical consulta-tion	
Hypertension	160 - 180	100 - 110	Medical consulta-tion	
Dangerous hypertension	>180	>110	Urgent medical consultation	

Blood pressure classification chart for adults as set by the World Health Organization. When blood pressure is measured, it should ideally fall within a specific range. Knowledge of this range and of your blood pressure should allow you to better manage your health.

Section 1

Unsatisfactory measurement results and accuracy

Question 1: My doctor says that all digital machines are innaccurate and that only a doctor or an experienced nurse can take blood pressure seriously. How accurate is the result of an electronic blood pressure monitor?

Answer: This is a very tricky question to answer without offending someone. There are still some people who believe that the earth is flat and that the moon is made out of blue cheese. The fact is that the first digital blood pressure monitors (from 30 years ago) were very difficult to use accurately and because it was a new technology, it was not well accepted by the medical sector. However, in the last 30 years, tremendous progress has been made and most blood pressure monitors that are sold today (from reputable brands) are as accurate as a traditional mercury or aneroid device. There are in fact international validation standards that compare digital blood pressure monitors to "gold standard" mercury devices and then grade the devices according to the results. So when you need to buy a device for home use, there are a number of organisations that you should look for on the packaging of the device. They are, in no particular order, the **BHS** (British Hypertension Society), the **ISH** (International Society of Hypertension), the **GüteZiegel** (German validation standard), the **AAMI** (American Association of Medical Instruments) or the **ESH** (European Society of Hypertension). If you find such a logo on the packaging, it is probably a very accurate device.

Today, most blood pressure monitors measure blood pressure by applying the so called 'oscillometric method'. In an oscillometric measurement, the blood pressure is accurately detected by analysing the pressure oscillations that happen during the deflation or inflation of the cuff. This method has been well accepted worldwide for more than thirty years and incidentally, it is applied in hospitals every day, whenever the patient's blood pressure needs intensive and highly accurate control. Many doctors do not realise that home-use digital blood pressure monitors use exactly the same technology as the 20 000 dollar machines that they use in intensive care. If they did, they would probably change their opinion of home devices.

One of the main reasons for different readings at the doctor's office and at home using a home monitor is that the conditions for measuring blood pressure at the doctor's office are not ideal.

To accurately measure your blood pressure, you should consciously relax for at least 5 minutes before taking your blood pressure. You should also take it at the same time of day as your last reading if you want to compare them. At the doctors office, you might also suffer from what is called "**white coat hypertension**", where you are nervous and this causes the blood pressure to rise temporarily. It is now a given fact that measurement of blood pressure at home, also called HBPM (Home Blood Pressure Measurement) **IS MORE REPRESENTATIVE OF THE PATIENTS REAL BLOOD PRESSURE** than the casual blood pressure taken at the doctor's office. This is provided of course that the device is used correctly by the patient.

> *"If you have a broken heart, I'd like to fix it. Repairs start at just $69. Special delivery charges may apply."*
>
> Jarod Kintz, This Book is Not FOR SALE

Many doctors and nurses prefer the stethoscope method because they can listen to the signals and get a deeper impression of the patient's condition. A digital blood pressure monitor only measures blood pressure and pulse, whereas an experienced doctor using a stethoscope can listen to many other sounds to get a better overall view of the patients health.

The technique of mercury or aneroid devices (also called auscultatoric blood pressure) requires careful training and application of specific methods. A slow deflation rate of 2 to 3 mmHg (millimetres of mercury) per second is essential to obtain accurate results with the doctor's measurement. However, more often than not, doctors or nurses use a much higher deflation rate and obtain wrong results. This is because quite often, the doctor does not have the necessary time to really measure blood pressure. In fact, for a blood pressure measurement to be representative at the doctor's office, he should measure the blood pressure at least three times in a row. It is important to realise that your blood pressure is fluctuating constantly and that the results are never exactly the same. When you use an electronic blood pressure monitor at home, you tend to do several measurements because it is so easy to do and you have more time than at the doctor's office. It is quite normal for the measurement results not to be identical to each other. If your doctor were to measure the pressure three or four times (which he never does!) he would also get different values.

The most convincing fact is that the world's leading experts on blood pressure monitoring prefer frequent home measurements by electronic devices against the casual measurements taken in their office! So if your doctor continues telling you that all digital devices are crap, it might be time for you to change your doctor.

Question 2: I check my blood pressure every day and I keep on getting different results. Is there something wrong with my blood pressure monitor?

Answer: Blood pressure is not a constant body parameter. It changes all the time. For normal physiological reasons, your blood pressure may fluctuate by up to 30 mmHg during a short time-period. So it is perfectly normal for your blood pressure to change between measurements. Even if you measure your blood pressure repeatedly, you will nearly always get different results. What is important is that you measure your blood pressure at the same time of day every time, under the same conditions, and that you then follow the trend of your blood pressure by plotting it on a graph. Just remember that there are many outside factors that will affect your blood pressure and you should try to avoid any unnecessary side factors such as talking, noise or movement while you measure your blood pressure.

One of the best ways to get a reliable picture of your blood pressure is to apply the "rule of three". In the "rule of three" you measure your blood three times in a row at one minute interval, twice a day (morning and night), for three days. Average each set of three consecutive readings and then plot the results on a graph. You might notice a trend where your blood pressure is higher or lower at a given time of day. This is perfectly normal. After three days, calculate and average of all the readings. The result of these repeated measurements will best represent your blood pressure.

Question 3: My doctor says that my blood pressure is 155 over 105, but when I measure at home, I get results that are much lower, like 140 over 90. Is there something wrong with my blood pressure monitor?

Answer: The most obvious answer to this is a phenomenon referred to as "white coat hypertension". This happens when a patient is nervous or disturbed by the doctor's presence and as a result his blood pressure rises. A change of 15 mmHg in systolic blood pressure is normal in a relaxed surrounding.

The MedActiv 3 day blood pressure plan

Understand the signals of your body

	Day 1		Day 2		Day 3	
	Systolic	Diastolic	Systolic	Diastolic	Systolic	Diastolic
Morning	120 (example)	80 (example)				
1st measurement						
2nd measurement						
3rd measurement						
Evening						
1st measurement						
2nd measurement						
3rd measurement						

Average	
Systolic	Diastolic

What should your blood pressure be?

Category	Systolic	Diastolic
Normal	Less than 120	Less than 80
Pre-hypertension	120 - 139	80 - 89
Hypertension Stage 1	140 - 159	90 - 99
Hypertension Stage 2	160 or higher	100 or higher

Use your blood pressure monitor in a sitting position

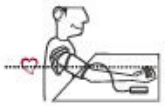
- 3 times in the morning before breakfast
- 3 times in the evening before going to bed
- Do this for three days and average all the results (systolic in the orange column and diastolic in the white one). Write down ALL the readings you get from your blood pressure monitor (systolic is the highest number and diastolic is the lower one) and give the report of your 3-day plan to your doctor.

Family name ..... First name .....

Date of 3-day plan: from the ..... to the .....

Treatment .....

- Sit down comfortably
- Do not smoke or drink
- Relax for 5 minutes



- Wrap the cuff around your upper arm at the level of the heart or place your wrist monitor at heart level
- Do not move your arm or talk

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Another possibility is that it is just a normal variation in daily blood pressure. Changes of up to 30 mmHg within a short time are perfectly normal, depending on what you are doing, especially if you are doing a physical activity such as sport or are under stress.

It is also possible that your doctor is not measuring your blood pressure correctly. He might be using antiquated equipment that is not calibrated or suitable for a modern day examination. More often than not, if two doctors measure the blood pressure of a same patient using their own equipment, they will get different results. The result depends on what equipment they are using and also on how they use it. This is one of the undeniable advantages of digital blood pressure monitors, in that they are much less dependent on user skill than the traditional devices.

Question 4: If my blood pressure varies over the day and I get different readings all the time, what is my real blood pressure?

Answer: The average of several results, obtained on several days, under comparable living situations and during the same time frame of the day represents your individual blood pressure. The best method for arriving at a representative result is to follow the "rule of three". In the "rule of three" you measure your blood three times in a row at one minute interval, twice a day (morning and night), for three days. Average each set of three consecutive readings and then plot the results on a graph. You might notice a trend where your blood pressure is higher or lower at a given time of day. This is perfectly normal. After three days, calculate and average of all the readings. The result of these repeated measurements will best represent your blood pressure. See the previous page for more information on this.

Question 5: I have two different blood pressure monitors from two different companies and they give me different results. Which one is the most accurate and why do I get different results?

Answer: Most electronic blood pressure monitors use the so-called 'oscillometric method'. Each manufacturer applies his own algorithm to analyse the signals and to determine the systolic and diastolic values. Some of the algorithms are better than others. The only way for you to determine which monitor is better than the other is to rely on the information that is provided with the monitor about its clinical validations. This is why it is important to buy blood pressure monitors based on hard evidence rather than marketing hype. There are significant accuracy differences between all the available monitors that can be shown by clinical studies.

Each manufacturer applies his own algorithm. However, these algorithms are tried and tested for the 'standard' population. There might be individuals for whom one device is more suitable than another. This is especially apparent in people with diabetes or who are obese. Another stand-alone category are women who have pre-ecclampsia (hypertension developed during pregnancy). There are monitors that are specially validated for use by these special populations.

A further reason for different results might be that the blood pressure has changed between the measurements. It is not unusual that consecutive measurements taken with the same device give different readings based on the unstable physiological conditions and influencing side factors such as talking, noise or movement.

Salt is pure, white, immaculate and incorruptible. The word salary is derived from the Latin word for salt. However, it is a dangerous cardiovascular threat.

Debunking medical urban legends

Salt and hypertension

For thousands of years, salt has been used as a commodity in trade and other industries and has been considered as a thing of particular value. Indeed the word "salary" is derived from the Latin word for salt. However, medically speaking, it has been touted as one of the biggest threats to cardiovascular health for many years. Is this true?

Salt is pure, immaculate, white and incorruptible.

In many health controversies, a great deal of heat is often generated by spurious arguments that tend to obscure the strictly science-based position. However, the evidence is overwhelming about the fact that high salt intake has a detrimental effect on cardiovascular health and that people in developed countries have a salt intake that is much too high.

Salt = Na

Salt is a commonly occurring mineral, the technical name of which is sodium chloride. The human body needs about 500 milligrams of sodium (1000 mg sodium = 2.5 g salt) a day to survive. There is more than enough salt found naturally in fresh foods to provide this amount, so discretionary salt is not really necessary to a healthy eating plan. It is recommended that we use no more than 2400 mg of sodium (about 6 grams of salt) a day. Salt intakes across Europe are known to vary widely, ranging from 8.6 g of salt per day in the UK, to around 12 g salt in Croatia. This is causing a long-term glut of cardiovascular problems.

This high salt intake is partly due to poor understanding by the patient of the fact that sodium and salt are one and the same thing. Many doctors and much of the literature available simply tell hypertensive patients to avoid salt, which the patient dutifully does, not realizing that over 75% of his salt intake comes in the form of sodium found in processed foods. Sodium is present in additives such as monosodium glutamate and sodium bicarbonate. As part of a successful cardiovascular management program, it is imperative that doctors inform their

patients of this crucial difference. About 10% of dietary sodium is naturally present in foods; 15% is added during cooking or at the table (so-called discretionary salt); and 75% is incorporated during manufacture and processing. It is evident, therefore that manufactured foods provide the greatest scope for significant reduction of salt intake. Examples of high salt processed foods include soy sauce, processed meats, canned soups, peanuts, chips and stock cubes.

The best example is found in a can of soup. Canned soup contains on average about 0.4 g of sodium per 100 ml. This means that in a plate of soup (about 250 ml) contains about 1 g of sodium (2.5 g of salt), i.e. over 40% of the recommended daily maximum.

Crystal death…

Salt plays an enormous role in blood pressure regulation. It helps to maintain the concentration of body fluids at correct levels. However, the more salt we eat, the more water is drawn into the bloodstream. This raises total blood volume, which leads to increased blood pressure. With high levels of fluid circulating through the brain there is a greater chance that weaknesses in the brain's blood vessels are exposed, and that they may burst, causing a stroke. Salt also plays a central role in the transmission of electrical impulses in the nerves, and helps cells to take up nutrients. Sodium is the major ion that accepts electrons. Sodium helps maintain the balance of electrolytes and the electrical conductivity of tissues.

In addition, salt also increases the risk of osteoporosis, particularly in women. High sodium intake can often lead to calcium loss (excreted out in urine). This loss in calcium is exacerbated if intake of calcium is low. Continued urinary calcium loss will translate to decreased bone density and increased risk for fractures in the later years.

Reductions in a minor key

A recent study in the US showed that if we reduced dietary salt intake in the USA by 3 g per day (1200mg less sodium per day), it could result in 60,000 to 120,000 fewer cases of heart disease, 32,000 to 66,000 fewer strokes and 54,000 to 100,000 fewer heart attacks.

A reduction in dietary salt of 3g per day would have approximately the same effect on reducing cardiac events as a 50% reduction in tobacco use, a 5% reduction in body mass index among obese adults or the use of statins to treat people at low or intermediate risk for CHD events.

And here's the kicker: reducing dietary salt intakes by 3g per day would save $10 billion to $ 24 billion in annual health care costs.

In the healthcare industry, "management" is a magic word that blankets all manner of excuses and that often fails to address basic issues such as "disease education", which is the axis on which healthcare should be balanced. There are as many definitions of disease management as there are disease management programs. The confusion is perhaps rooted in a fundamental paradox: In disease management, we really should try and manage patients, not diseases. It is as important for a doctor to educate his patients about the differences between salt and sodium as it is for him to prescribe the correct cocktail of medication. It is only through information that a doctor will truly empower his patients to take responsibility for his disease.

Question 6: I dropped my device. Will it still be accurate?

Answer: Generally, your blood pressure monitor will give you accurate results if it is working. Most of the electronics inside are solid-state electronics, in the sense that they do not move. It might for example be compared to an electronic calculator. If an electronic calculator is dropped, it does not become inaccurate. It either works or it doesn't. Of course, if you drop your monitor, it has more chance of breaking than a calculator because it has more parts and it is more fragile. You might for example break the LCD display or a piece of tubing might become disconnected. Generally, the only thing that can cause your blood pressure monitor to become inaccurate is a physical breakage or problem, such as a disconnected air-tube inside the device. So if the device has been dropped but you cannot detect any malfunction when operating it, there is no need to worry about the accuracy. The main component that influences the accuracy of your blood pressure monitor is the algorithm that is stored in the computer program. This software either works or doesn't. Other parts that affect the accuracy such as the deflation valve and the pressure sensor are very well protected against modifications by accidents or ageing.

Most manufacturers recommend that you send in your blood pressure monitor every two years for a calibration check. This is a left-over habit from when the blood pressure monitors contained mercury. In mercury devices, there was often mercury leakage that affected the calibration of the unit. It is generally unnecessary to send your blood pressure monitor for calibration, but at the same time, it allows the manufacturer to check all the parameters of your blood pressure monitor and to replace any worn parts such as cuffs.

Question 7: Why and when should I send my blood pressure monitor in for an accuracy check?

Answer: Modern blood pressure monitors are developed together with engineers, doctors and medical experts to remain accurate for a long product life. To guarantee this accuracy we recommend - in accordance with international standards - that you ask your manufacturer or distributor to perform an accuracy check every two years.

Question 8: Is my wrist monitor as accurate as an upper arm model?

Answer: Doctors love to hate wrist machines. It is true that wrist devices are not clinically as accurate as upper arm devices, especially considering that they are much more sensitive than upper arm devices to external factors such as movement and positioning. However, they are more than accurate enough for managing your blood pressure. It is an interesting conundrum; an apt comparison is perhaps that of the hi-fi specialist, who will swear to all that can hear that Vinyl LP records give a much better sound than CDs, that their sound is "warmer" or "more alive". This may be true, but for most people, CDs give a more than good enough sound, and they're so much more practical. So today, more people use CDs than LP records. A wrist device might not be as "clinically" accurate as an upper arm device, but it is so much more practical. When your doctor measures your blood pressure at his clinic, he is anyway only getting a quick general idea of the state of your blood pressure. Generally, a person who buys an upper arm device will use it less often than a person who buys a wrist device, because it is a more time-consuming procedure. He first has to take off his jacket, roll up his shirt or take it off and only then can he take his blood pressure. With a wrist device, he can take his blood pressure anywhere, anytime, really quickly, without getting undressed. So as a result of this, many people who buy a wrist device use it more often and have a better idea of their blood pressure than people who buy an upper arm device. Once doctors realise that wrist devices are an ideal tool for the management of blood pressure, they will be more readily accepted.

Wrist devices are also a much better alternative for obese people. With obese people, the layers of subcutaneous fat at the level of the arm are much more apparent and make it difficult to get an accurate blood pressure, even with an adapted larger cuff. Generally, peoples wrists are not as fat as their upper arms so the blood pressure is easier to measure at that level.

However, measurements at the wrist are more sensitive to movements during measurement, which may result in a higher number of 'error' messages. Therefore please take care not to move the wrist or hand during measurement.

Sustainable Health

Health is more than just the absence of disease…

It is very important that the cuff be positioned at the level of the heart during a measurement. This is more complicated with wrist devices and may lead to wrong results. For every 10 cm that the blood pressure monitor is placed above the level of the heart, the blood pressure is underestimated by 8 mmHg and vice-verso for every 10 cm that the blood pressure monitor is below the level of the heart the blood pressure is higher by 8mmHg.

Question 9: I have an upper arm monitor and a wrist monitor. Why do I get different results?

Answer: Basically, both systems have a comparable accuracy and follow the same principle. But as each human has individual blood vessel and tissue constitution, one of the two different positions may have advantages for some individuals.
It is very important that the cuff be positioned at heart level during measurement. This is more difficult at the wrist and may lead to wrong results. 10 cm higher than heart means an underestimation by 8 mmHg while 10 cm below heard level means that the reading will be 8 mmHg too high.

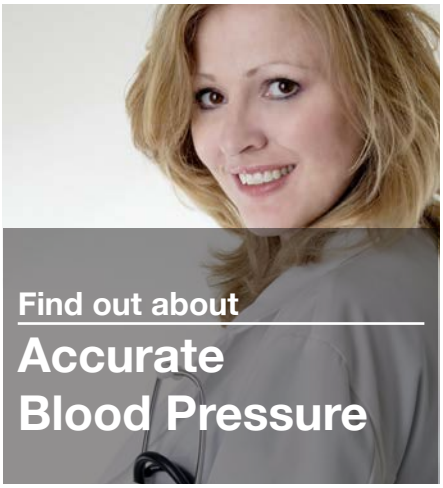
At the wrist, the arteries are positioned very near to the surface of the skin and the body signals are therefore less covered by tissue than at upper arm level. This may lead to better readings at wrist than upper arm for some individuals, especially for obese people. People with obese arms may face problems when placing the upper arm cuff but get better results at the wrist.

Measurements at wrist are more sensitive against movements during measurement, which may result into a higher number of 'error' messages. Therefore please take care not to move the wrist and hand during measurement!

There are several individual factors, which may affect the reading. We therefore recommend that you compare both systems and choose the one that gives the most constant results for you. If both methods behave similarly but give significantly different values, we recommend that you use the upper arm model as upper arm measurements are clinically more accurate.

Question 10: Is a manual semi-automatic monitor as accurate as an automatic device?

Answer: Both systems use exactly the same technology and algorithm. Automatic models use an electric pump instead of the hand-pumping ball but this has no influence on the accuracy.



Question 11: The systolic pressure measured by my blood pressure monitor is similar to what my doctor measures but why is the diastolic pressure about 10 mmHg higher with the electronic monitor?

Answer: The diastolic pressure is very difficult to detect with a stethoscope and depends very much on the observer's capabilities and hearing. The correlation of the diastolic pressure is therefore typically more difficult than the systolic.

We all die of a broken heart...

"We all die of a broken heart... The moment that the heart stops beating indicates the end of life. The heart is the most important organ in our body, yet we abuse it, both emotionally and physically. You only have one heart, love it, always and forever..."

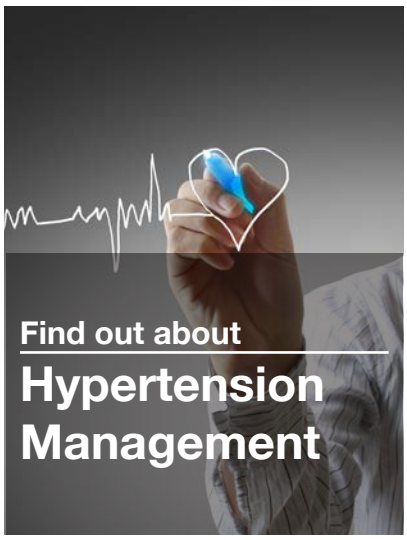
Uwe Diegel

Question 12: When I measure my blood pressure several times in a row, it suddenly start getting much lower at the 5th measurement. Why?

Answer: If you take too many measurements in a row, you are causing the blood to congest in your arm because you are not waiting long enough between measurements. Please release the cuff between measurements.

Question 13: Does my blood pressure monitor also give me accurate measurements if I am pregnant?

Answer: About 10% of women develop high blood pressure during pregnancy (preeclampsia). Some blood pressure monitors have been specially validated for measurement of blood pressure during preeclampsia. If you are pregnant, please monitor your blood pressure carefully with a monitor that is specially validated for this. The pressure detection is not different for a patient with or without pregnancy.



Hypertension Management What are we doing wrong?

Germany has the biggest market in the world for blood pressure monitors. Last year alone, 2.5 million blood pressure monitors were sold in Germany. From the point of view of a manufacturer of blood pressure monitors, this is wonderful. It is good business. However, we must also ask a question that has an unpleasant answer… Is this also good health management? Unfortunately, from a person who prefers to view blood pressure monitors as useful only if used in the context of a managed healthcare program, the answer is an emphatic NO! Do German people who buy a blood pressure monitor have a better cardiovascular risk profile than those who don't? The answer is "not really". The reason for this is that many people who buy a blood pressure monitor do so to assuage their guilt about their poor lifestyle but do not really change their lifestyle.

In the healthcare industry, "management" is a magic word that blankets all manner of excuses and that often fails to address basic issues such as "disease education", which is the axis on which healthcare should be balanced. There are as many definitions of disease management as there are disease management programs. The confusion is perhaps rooted in a fundamental paradox: In disease management, we really should try and manage patients, not diseases.

All managed healthcare programs should have a common goal. They should focus on an integrated, pro-active approach to delivering healthcare services to patients who have a particular disease to achieve good outcomes at the most reasonable cost. It is absolutely pointless to tell a patient to purchase a blood pressure monitor and to monitor himself regularly if the patient is not made aware of what he is attempting to control and what his parameters are. An understanding of the parameters of hypertension is essential to its eventual successful control.

The challenge for healthcare systems is to find a practical way to implement standard guidelines with the flexibility for doctors to tailor-make plans for the needs of individual patients. Doctors are more likely to support disease management methods if they allow for doctors to consider the needs of individual patients. And vice-versa patients are more likely to benefit from disease management if guidelines can be tailored to their specific circumstances and experience.

Armed with clinical and patient-centered data, doctors can design and implement structured plans matched to the individual needs of their patients. Hence, disease management need not be viewed as an inflexible "cookbook" approach to healthcare.

The single most important step for doctors treating hypertension is to enlist their patients as partners in their own healthcare. If a doctor recommends that patients take their BP measurements at home, they must make sure that the patient is doing it right, making sure that they are testing their BP at the same time every day and ensuring that the patients use monitors that are clinically validated according to the BHS or ESH standards. Since the medical use of mercury is being

It's all about education

more and more restricted around the world, the calibration and accuracy of non-mercury devices is becoming increasingly important. The doctor must compare the patient's readings with theirs to determine accuracy. Blood pressure values obtained by home measurements are several mmHg lower than those obtained by office measurements with home blood pressure values of around 125/80 mmHg corresponding to clinic pressures of 140/90 mmHg; Home blood pressure measurements also provide numerous values on different days in a setting closer to daily life conditions than the doctor's office. It also favourably affects patient's perceptions of their "hypertension" problems and improves adherence to treatment.

At the moment, research shows that only 8% of all patients with hypertension are completely controlled. Most patients do not realise that hypertension is a "silent killer" with no symptoms to remind them of the need for continuous treatment until the swift strike of a stroke or other deva- stating complication.

Good communication between the physician and the patient lies at the core of the successful management of hypertension. Good information about blood pressure and high blood pressure, about risks and prognosis, about the expected benefits of treatment and about the risks and side effects of treatment is essential for satisfactory life long control of hypertension

Many people in the medical profession tend to underestimate the potential damage of pregnancy induced hypertension, regarding it as a transient phase that will more often than not go away without requiring treatment

Hypertension in pregnancy

Watch out for those early signs…

High blood pressure in pregnancy should be treated as rapidly and as effectively as possible because of the many possible repercussions for both the mother and the baby.

Millions of people are taking medication for high blood pressure every day. An even higher number of people remain undiagnosed until they suffer a stroke or a cardiovascular event such as a heart attack. On the other hand, an estimated 26% of persons diagnosed as mildly hypertensive based on doctor's tests have no evidence of hypertension when 24-hour ambulatory recordings are obtained. Doctors often introduce errors due to sensory impairment (difficulty hearing Korotkoff sounds or reading the manometer), inattention, inconsistency in recording Korotkoff sounds (e.g., Phase IV vs. Phase V), and subconscious bias (digit preference for numbers ending with zero or preconceived notions of normal pressures). Another blood pressure problem that is often underestimated by the medical profession is that of preeclampsive hypertension, which is a hypertension problem that develops during pregnancy in many women. Incidentally, according to a study published in the Journal of the American Medical Association, more than one third of pregnant women may undergo increased intervention and cesarean surgery as a result of white coat hypertension.

High blood pressure in pregnancy should be treated as rapidly and as effectively as possible because of the many possible repercussions for both the mother and the baby. Severe hypertension can lead to the expectant mother's red blood cells breaking down, disseminated intravascular coagulation, cerebral hemorrhage, hepatic failure and acute renal failure, liver damage and blood clotting problems. There is also a risk of the placenta detaching itself from the uterus.

More often than not however, hypertension problems are monitored and treated correctly during the pregnancy and there are no severe consequences. If it has not been monitored and treated correctly, there is a much higher chance that the doctor will have to deliver the baby prematurely, often leading to much more expensive procedures to keep the baby alive and also leading to a myriad of other medical problems for the mother and baby, sometimes even to the death of the baby.

According to some new research in pregnancy-induced hypertension, a protein responsible for regulating the body's balance of salt might trigger hypertension if it mutates or changes. This protein, called the mineralocorticoid receptor, switches on the cellular process that causes the kidneys to reabsorb salt. This

can lead to extreme salt retention and cause a pregnant woman's blood pressure to increase dramatically.

Hypertension in pregnancy can be divided into three categories.

•Chronic hypertension, which is defined as a blood pressure greater than 140/90 mmHg that either predates pregnancy or develops before 20 weeks of gestation

•Pregnancy induced hypertension, which develops after 20 weeks of gestation and complicates 5% to 10% of pregnancies

•Preeclampsia, which is pregnancy induced hypertension in association with proteinuria or oedema, or both, and virtually any organ system may be affected.

High blood pressure will go away after the baby is born for most women. However, a few women may continue to have high blood pressure after the baby is born because they have developed kidney disease, diabetes or other health problems or because it was not diagnosed and treated properly during their pregnancy. If the hypertension is caused by a mutation in the mineralocorticoid receptor, it will possibly cause salt retention. It will often pass down genetically to the child and will be the principal cause for early hypertension problems for the child.

Many people in the medical profession tend to underestimate the potential damage of pregnancy induced hypertension and regard it as a transient phase which will more often than not go away without requiring treatment. Although this is true in many cases, each and every case of pregnancy-induced hypertension should be reviewed and treated according to the etiology of the disease and according to the circumstances surrounding the development of the hypertension.

If your patient understands the risks, they can greatly reduce their chances of a fatal heart attack. 73% of the risks that cause heart disease can be avoided!

Blood pressure values obtained outside the clinic setting have consistently been shown to be lower and to correlate better with target organ damage than blood pressure measurements obtained by health care personnel.

The superiority of home or workplace blood pressure measurements depends on use of accurate and calibrated blood pressure monitors and careful repeated instruction in how to measure blood pressure. So-called white-coat hypertension, in

which a patient's blood pressure is elevated when measured by a doctor but is otherwise normal, occurs in approximately 26% of hypertensive patients. It is likely an anxiety response to having one's health assessed or perhaps a conditioned response - that is, an initial anxiety response that has been reinforced and perhaps amplified through patient-physician interactions. White-coat hypertension is also associated with other coronary risk factors, such as obesity, insulin resistance, and elevated low-density lipoprotein cholesterol levels. However, evidence of increased target-organ damage has not been found consistently in patients with white-coat hypertension.

Blood pressure values obtained by home measurements or by ambulatory monitoring are several mmHg lower than those obtained by office measurements with 24 hour average or home blood pressure values of around 125/80 mmHg corresponding to clinic pressures of 140/90 mmHg.

About one person out of three has high blood pressure which requires regular monitoring either by medical personnel in the office or at home by the patient or a family member. Home blood pressure monitoring is recommended both for the initial diagnosis of hypertension as well as for the evaluation of the response to treatment. Home monitoring also has potential value in assessing resistant hypertension, hypotensive symptoms associated with medication, and autonomic neuropathy. Home blood pressure measurement offers several benefits. It allows patients to take an active role in their health care, it reduces health care costs, and it can reduce the incidence of "white coat hypertension". It also allows people to find out what is regrettably often denied to them. The freedom to accept responsibility for themselves…

Section 2

Questions regarding measurement performance

Question 14: What is the right position for measuring my blood pressure?

Answer: Although all blood pressure monitors are different, they all work in the same manner and there are certain universal rules about measuring your blood pressure at home.

The correct measuring position

To obtain an accurate blood pressure measurement, you should adopt the following position:

For upper arm devices:

- Sit comfortably on a chair in front of a table, with both feet on the ground.
- Rest your arm on the table.
- Relax completely for 5 minutes before taking a reading.

The cuff must be at the same level as the heart, or an accurate measurement will not be possible.

Measure and record the blood pressure at the same time every day to get the pattern of your blood pressure.

For wrist devices:

To obtain an accurate blood pressure measurement, you should adopt the following position:

- Sit comfortably on a chair in front of a table, with both feet on the ground.
- Rest your arm on the table with the back of the hand resting on the box of the blood pressure monitor to bring it to the level of your heart.
- Relax completely for 5 minutes before taking a reading.

The blood pressure monitor must be at the same level as the heart, or an accurate measurement will not be possible.

Measure and record the blood pressure at the same time every day to get the pattern of your blood pressure.

Selecting the correct cuff size

It is important to select the correct cuff size to measure your blood pressure.

The use of the wrong cuff size is the principal cause for misdiagnosis in hypertension. Most manufacturers offer 2 sizes of cuffs: medium (22-32cm) and large (32-42cm). Select the cuff size that matches the circumference of your upper arm. Medium is the correct size for most people.

Placing the cuff on your arm (for upper arm models)

Wrap the cuff around the left arm. The arm should be uncovered. Take care not to restrict the blood flow by pushing up the sleeve too tightly. Pull on the cuff and close it so that it is comfortable. Do not tighten excessively. The cuff's edge should be placed approximately 2-3 cm from the crook of the elbow and the tube should be pointing towards your hand.

Placing the blood pressure monitor on your wrist (for wrist models)

Position the blood pressure monitor so that the device is on the inner wrist. Wrap the cuff around the wrist. The wrist should be uncovered. Pull on the cuff and close it so that it is comfortable. Do not tighten excessively. The top side of the blood pressure monitor should be placed approximately 1,5 cm from the palm of the hand. Make sure that you are in the correct position and that the blood pressure monitor is at the level of your heart. A 10 cm difference in height will result in a measurement error of 8 mmHg.

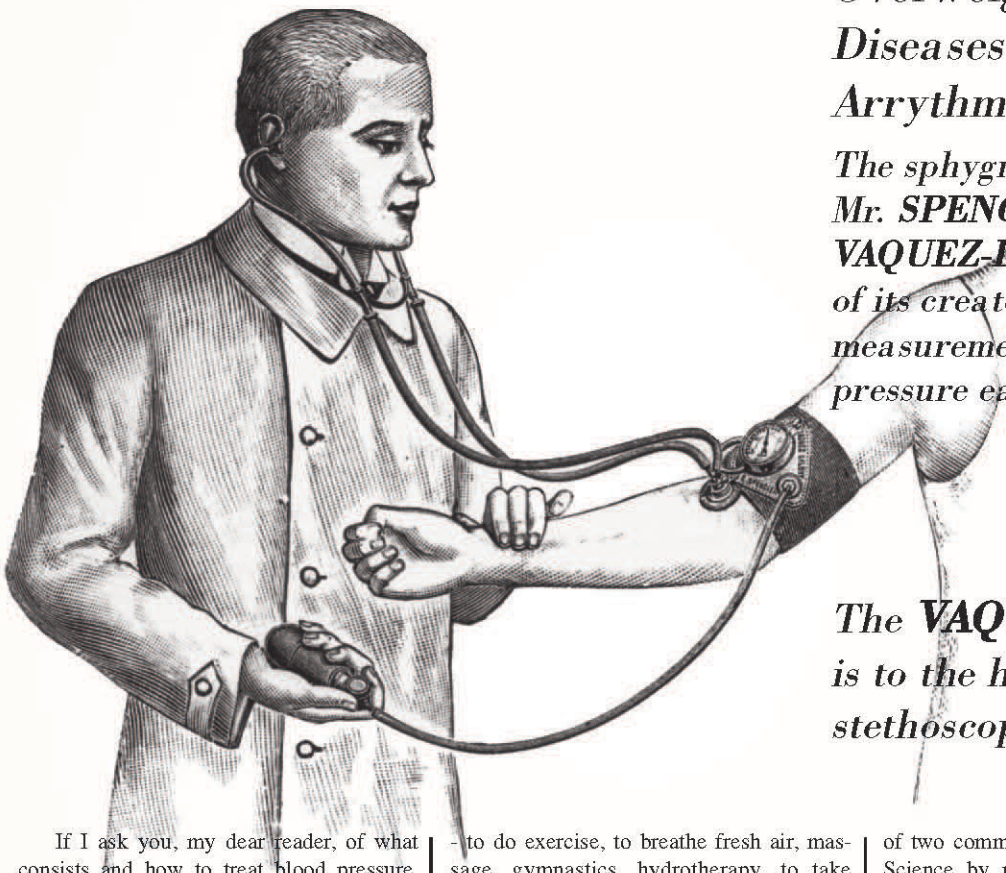
A NEW INSTRUMENT
to measure blood pressure

The new sphygmomanometer of Mr. Emile SPENGLER, created together with the eminent doctor Vaquez and Laubry heralds a new era of medical precision. This instrument is useful to measure the blood pressure and to diagnose diseases of the heart.

The measurement of the blood pressure in the heart is good for the treatment and the understanding of the following maladies

Diabetes
Overweight
Diseases of the heart
Arrythmia

*The sphygmomanometer of Mr. **SPENGLER**, named the **VAQUEZ-LAUBRY** in honor of its creators, makes the measurement of the blood pressure easy and precise.*



*The **VAQUEZ-LAUBRY** is to the heart what the stethoscope is to the pulse*

If I ask you, my dear reader, of what consists and how to treat blood pressure, you would probably be much embarrassed to answer me.

The symptoms by which blood pressure appears - varied disorders, pains, weakening, etc. - are not, indeed, a sufficient indication, because they are common to various illnesses. The headaches, bad blood circulation, almost all the forms of physiological misery, resemble these preambles, and even the most educated doctors are easily mistaken when it comes to measuring blood pressure.

The first thing to do is put the person suffering from high arterial pressure to a regime, a severe regime, scrupulously studied, with an aim of providing for the expenditure of the body, while measuring its blood pressure regularly. It is also advisable to prescribe to drink a lot - not alcohol, of course! - to do exercise, to breathe fresh air, massage, gymnastics, hydrotherapy, to take mineral water (Vichy, Contrexéville, etc), to avoid excesses, emotions, overwork, - in short, all that it is necessary to increase the activity of combustions and to eliminate the impurities from blood.

Whatever its real genesis, on which the princes of science are far from agreeing, blood pressure is always balanced by a more or less major disorder of the blood circulation in the arteries. It is thus logical that if this circulation is measured and controlled, a good part of the work will be done.

Conclusion: the sphygmomanometer of Mr. Emile **SPENGLER** - that measures the blood pressure "like a ruler measures the centimeters" - is to be recommended to my eminent colleagues. Let us add that the **VAQUEZ-LAUBRY** sphygmomanometer of Mr. Emile **SPENGLER** was the subject of two communication by the Academy of Science by professor Girerd, Doctor Es-Sciences and at the Academy of Medicine by Dr. Mourad, principal doctor of the Marine, laureate of the Academy.

All doctors will understand me.

Dr. Legeid

N-B. - One finds the **SPENGLER** sphygmomanometers in all good pharmacies and at the **SPENGLER** Company, 16 rue de l'Odéon, Paris. Sphygmomanometer **VAQUEZ-LAUBRY** 12 Fr. 50; stethoscope **SPENGLER** (of high quality) 7 Fr. 50. Export to other countries: The sphygmomanometer, franco 14 FR.; the stethoscope franco 9 Fr.

My esteemed colleagues recommend a regular measurement of the blood pressure to evaluate the risk of cardiovascular accidents for insurance companies.

Avoid immitations - formally demand the VAQUEZ-LAUBRY

Question 15: How often and when shall I measure my blood pressure with an electronic blood pressure monitor?

Answer: Generally, the more you measure, the better! But as blood pressure is a very variable body parameter, be aware that the results are not always the same. To compare your pressure from one day to another, you should perform a daily measurement under comparable conditions. Measure, for example, every morning as you get out of bed. Make sure that you feel relaxed and are not disturbed by your environment.

When doing home measurement of blood pressure it is recommended that you apply the "Rule of 3", which means that you should take your blood pressure 3 times in a row (at about 1 minute interval) in the morning, 3 times in a row in the evening, and this for 3 days. Then the average of these results will give you a representative idea of what your blood pressure is. Some doctors recommend that when you do the average of the blood pressure measurements you cut out the first of the three readings out and only average the las two of every three readings. This is because it takes a few minutes for your blood pressure to stabilise after you sit down and the first reading is generally a bit higher.

It of course also depends if you suffer from uncontrolled hypertension. If your blood pressure is perfectly under control, you should just check it episodically (about once a week should be amply sufficient). However if your blood pressure is not under control, then you should check it every day.

Listen to your body

Health is all about understanding the signals of your body…

Question 16: What is the meaning of the different messages "Err1", "Err3", etc?

Answer: Digital blood pressure monitors are developed to detect the blood pressure accurately and to display results only if they are free of errors. If an error is detected during a measurement, the device distinguishes between different causes of the error and displays the related error code accordingly. Normally, the comprehensive instruction booklet that is provided with your device explains the meaning of the different errors.

The new generation of connected devices that are operated through your smartphone are much simpler to use because they have a colorful display (the smartphone) that really explains all the ins and outs of your measurement.

Question 17: My blood pressure monitor pumps up but does not release the air, what is wrong?

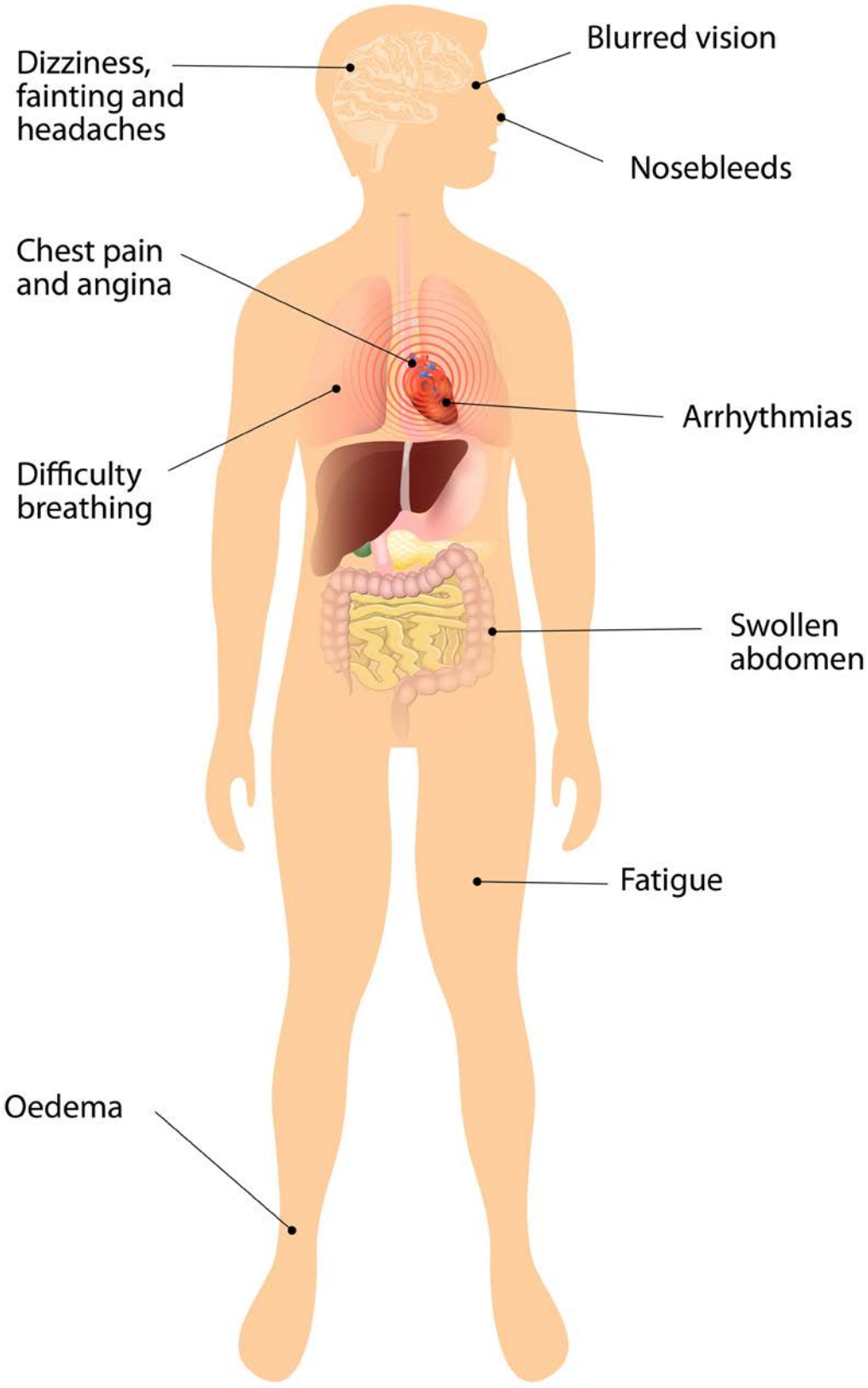
Answer: This is a very rare occurrence and only happens if the deflation valve is blocked. If this happens, please simply return your blood pressure monitor to the manufacturer for repair or replacement.

CAUTION: Please immediately unfasten the cuff if the pressure displayed on the LCD is over 300 mmHg and it does not deflate on its own.

Question 18: On which side should I generally measure my blood pressure, left or right?

Answer: Medically speaking, you should test your blood pressure on both arms and use the arm on which you measure the highest values. This having been said, there is a tendency to use the left arm only for home monitoring as most people are right handed and it is easier for them to fit the cuff on the left arm. Generally you will find that you have very similar values on the left and right arm or wrist. If you find that you regularly have a substantially higher systolic value on one of your arms, it might be worth having what is called an A.B.I. (Ankle-Brachial Index, also known as a Systolic Pressure Index, S.P.I.) test where a measurement is taken simultaneously on both arms or on an arm and a leg. The measurements of ABI or SPI provide a simple and rapid method for the evaluation of peripheral arterial disease, even prior to the occurrence of functional symptoms. Beyond the diagnosis of peripheral arterial disease, ABI and SPI are also known as markers of atherosclerosis and as cardiovascular markers.

High blood pressure symptoms



Question 19: My arm circumference is bigger than the size stated on the cuff. What should I do?

Answer: If you use an upper arm monitor, the standard cuff that is normally provided with the device is suitable for an upper arm circumference between 22 and 32 cm. If your arm circumference is larger than this, you need to use a large adult cuff, which is designed for circumferences between 32 and 42 cm.

Standard international cuff sizes are as following: 16-25 cm (small), 22-32 cm (regular) and 32-42 cm (large). If your arm does not fit within any of these ranges, it will probably be better for you to use a wrist device. Even if it is possible to adapt in certain cases extra-large cuffs to digital blood pressure monitors, it is not recommended, because of the poor signal reception past a certain size. The above dimensions are suitable for most people. Very often, people with particularly large arms get much better results with wrist devices than with upper arm devices.

For wrist devices, it is very rare that the standard cuff doesn't fit. Most cuffs fit a wrist size of at least 19,5 cm. However, if your wrist circumference is above this size, you should not use a wrist device as there are no adapted cuffs of a larger size for wrist devices.

Question 20: My arm circumference is smaller than the size stated on the cuff. Can I just buy a wrist monitor and use it on my arm?

Answer: NO!!! Wrist monitors apply a completely different detection procedure that is specifically designed for the physiological condition at the human wrist. This detection procedure cannot be transferred to the upper arm even if the cuff fits. If your arm size is too thin to use even the small upper arm cuff (16-22 cm), please use a wrist device ON THE WRIST.

Question 21: Can I place the upper arm cuff anywhere else on my body, such as on a leg, ankle or forearm?

Answer: NO!!! The cuff of upper arm devices should only be used on the left or right upper arm. Please make sure that you use the correct size cuff.

There are special cuffs that are manufactured for use on an ankle or a thigh, but these are not necessarily designed for measuring blood pressure. Digital blood pressure devices are designed to be used only on the wrist or on the upper arm. There have been attempts in the past to manufacture blood pressure monitors that would take the blood pressure on the finger, but these devices are very inaccurate and have no scientific standing whatsoever.

Even if the cuff might fit other parts of your body, home-monitoring blood pressure monitors are exclusively designed for the upper arm or the wrist and would give wrong results in other positions.

Question 22: What happens if I don't place the wrist cuff at heart level?

Answer: It is very important that the cuff be positioned at heart level during a measurement. For every 10 cm that you are above the heart the blood pressure will be underestimated by 8 mmHg and vice-verso for every 10 cm that the device is under the heart the blood pressure will be higher by 8 mmHg. If you want to have a bit of fun, take your blood pressure with your arm straight up in the air and you will see that you have a very low blood pressure, while if you hang your arm on your side and take your blood pressure it will be high. This is of course not your real blood pressure, because it is affected by gravity. When you measure your blood pressure, you are trying to know the actual pressure in your heart so it is important that you measure at the same level.

Question 23: How long should I wait between measurements?

Answer: You doctor will tell you that you should wait at least a minute between measurements but studies have been made that demonstrate that for oscillometric (digital) devices, the time between measurements can be reduced to 15 seconds without affecting the results. Of course you have to be reasonable. If you continuously measure blood pressure at 15 second intervals, you will eventually cause a congestion of the blood in your arm.

You will also find that if you wait for 5 minutes and rest before measuring your blood pressure, there will normally be very little difference between 3 readings taken at 15 second interval, whereas if you just sit down and immediately measure your blood pressure consecutively, you will find big differences between the readings. This is because it takes a few minutes for your blood

pressure to “settle”. It is also perhaps the reason why doctors ask you to wait for a minute or 2 between readings. This gives your blood pressure a chance to settle.

Question 24: I installed new batteries but after about 50 measurements they were already empty. Is this normal?

Answer: An average set of batteries should last you about 150 readings for an upper arm device and about 250 readings for a wrist machine. That is of course depending on the quality of the batteries. If you have bought a blood pressure monitor from the Shanghai Scrap Plastic Corporation for 5 dollars, you cannot expect to get a particularly device or good quality batteries; but this stands to reason...

When you replace the batteries, ensure that the batteries are good quality alkaline batteries and that they haven’t been in the shop for 3 years waiting for a customer. If the batteries are too old, they will loose capacity. On average, a battery will become flat after 7 years of standing on a shelf. So if you buy a set of batteries that is 3 years old, you have already lost nearly half the power. Normally there is a date of expiration on the packaging of the batteries. Please check this carefully.

A chain is only as strong as its weakest link... When you change the batteries, please change ALL the batteries. If one of the batteries is weaker than the others, the whole device will only last as long as the weakest battery. It is tempting to change only one battery because of the cost of batteries, but you will find that it is not a worthwhile exercise.

A battery may work with other devices (alarm clock for example) that have a lower minimum required input voltage but may not work with a blood pressure monitor that has a relatively higher minimum level.

If your blood pressure monitor has remained in the warehouse or on the shelf of a dealer, sub- dealer or pharmacy for too long, the lifetime of the batteries can be significantly reduced.

Rechargeable batteries generally give disappointing results because a blood pressure monitor requires a relatively high voltage. You might only get a few readings out of a fully charged set of rechargeable batteries before they need to be recharged.

Ambient temperature also plays a big role with batteries. You will notice that your car is sometimes more difficult to start in winter when it is cold. When the battery is cold, especially in sub-zero temperatures, the electrolytes inside the battery have to work much harder to provide the power. They then get used up much faster. For your car it doesn’t matter, because the battery gets recharged as you drive, but for the batteries of your blood pressure monitor, it has a significant influence. At temperatures below 15°C, the performance of batteries is greatly reduced.

The new generation of connected devices has built in lithium batteries that recharge by USB cable in about 30 minutes. One charge is enough for about 200 readings depending on the brand of the device.

Question 25: Does my blood pressure monitor become less accurate if the batteries are flat?

Answer: No. A blood pressure monitor either measures or doesn’t, just like a calculator. A calculator does not become less accurate if the battery is flat; the LCD simply becomes less visible. In most blood pressure monitors today, there is a low battery indicator that appears on the LCD when the power of the batteries is insufficient to take a measurement.

You only have one heart

Take care of it...

The healthy lifestyles of wine drinkers, and not wine itself, is the main reason for their lower risk of heart disease compared with imbibers who prefer beer or vodka.

Red wine and hypertension

The power of television: the "French Paradox"

In November 1991, Americans were told on "60 Minutes" that even if French people ate fatty foods and smoked more than Americans they were three times less likely to die of a heart attack. The reason: "Red wine reduces the risk of heart disease". This quickly became branded as "the French Paradox".

Within four weeks, U.S. sales of red wine rocketed by 44%. By February 1992, a Gallup poll showed that 58% of Americans were aware of research linking drinking red wine to lower rates of heart disease. Five months later, "60 Minutes" re-broadcast the "French Paradox" segment. Sales of red wine shot up 49% over the previous year. During the next few years, wine manufacturers marketed wine as a health elixir. Full-page newspaper ads announcing that drinking red wine counteracted French consumption of fatty food were placed in American newspapers.

There is a collective misunderstanding of the dangers of alcohol worldwide. The fact is that according to data from the world's largest study of heart disease, conducted by the World Health Organization (WHO) during the past decade in 21 countries with 10 million men and women, French heart disease statistics appear to have been underestimated and the "French Paradox" overestimated. France's rate of heart disease is actually similar to that of neighbouring Italy, Spain, and southern Germany. The lower coronary mortality in France compared with other countries is a consequence of different ways of coding coronary mortality.

The healthy lifestyles of wine drinkers, and not wine itself, is the main reason for their lower risk of heart disease compared with imbibers who prefer beer or vodka. Statistically, wine drinkers are more likely to be light drinkers, non-smokers, of normal weights, physically active, and to work in "white collar" jobs.

According to WHO, France has the sixth highest adult per capita alcohol consumption in the world. And while coronary heart disease may be less pervasive in France than in many others, it is still the number one cause of death.

It is myth that the French are healthier because they drink. There is no scientific consensus today over the protective effect of alcohol. The link between the quantity of alcohol consumed and increase of risk of diseases, particularly cancer, is, on the other hand, scientifically validated.

Alcohol creates strain on the liver and kidneys and creates excess acidity in the body. It worsens diabetes in several ways, such as by interfering with the action of insulin, dropping blood sugar to dangerously low levels, and by worsening diabetic neuropathy. Alcohol has several effects on the heart. These can be separated into effects on the electrical system and effects on the muscle itself. In many patients, alcohol will produce irregular beats and can lead to tachyarrthymias. Other individuals will have irregular beats while imbibing, but only seen on monitors not with symptoms.

In regards to the muscle, some patients experience what is called alcoholic cardiomyopathy. This weakening of the heart muscle will often lead to heart failure with repeated exposure to alcohol.

One of the harmful effects of long-term alcohol intake is its association with hypertension. Consuming three or more drinks of alcohol per day approximately doubles the risk of having hypertension. Alcohol has been estimated to account for about 5%-20% of hypertension in populations. Alcohol is also associated with resistance to anti-hypertensive therapy. It sometimes interferes with the BP-lowering effects of some medications.

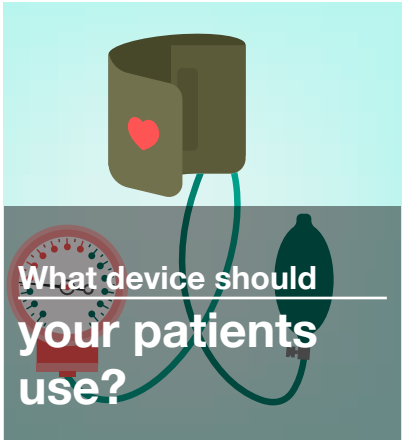
Studies exist demonstrating that one glass of alcohol or less a day can boost the level of artery-cleaning “good” cholesterol and reduce the risk of blood clots for men over 50 years of age and post-menopausal women. But these studies often fail to point out that taking a daily dose of baby aspirin, quitting smoking, cutting down on saturated fat, exercising regularly, and losing weight can increase the “good” cholesterol. Fruits and vegetables contain even greater amounts of antioxidants than a glass of red wine.

So even if a glass of red isn’t bad every now and then because it has a certain amount of antioxidants (and I’m pretty sure they don’t mean Bin Laden when they refer to antioxidants), people should know that a handful of grapes or a couple of red tomatoes contain more anti-occident than a glass of wine. Another thing to consider is that most people don’t just drink a single glass of red wine in an evening.

> ***When nothing existed,***
> ***Love existed,***
> ***and when nothing shall remain,***
> ***Love shall remain :***
> ***it is the first and the last.***
>
> *Princess Sheherazade, One Thousand and One Nights*

How to advise the patient on his choice of a blood pressure monitor?

Mercury sphygmomanometers are normally not recommended to patients because of the inherent danger associated with the use of mercury and because they are difficult for the patient to operate with any degree of accuracy. Aneroid blood pressure monitors are very popular but also need a certain amount of training. There is also such a great variation in the quality of the devices available on the worldwide market that buying an aneroid blood pressure monitor has become a game of chance, unless the patient is advised to purchase a recognised brand name, which is then substantially more expensive. The most popular option worldwide is the use of digital blood pressure monitors.



Advantages of digital monitors

The accuracy of the new range of blood pressure monitors available is such that many have received the best possible grade (Grade A/A) according to the BHS (British Hypertension Society) validation protocol and are now accepted worldwide as the logical alternative to standard measuring methods. Because digital monitors are easy to use, they are by far the most popular blood pressure measuring technique. Any half-decent digital BP monitor will be accurate to at least 3mmHg.

Wrist versus upper arm?

Wrist blood pressure account for about 65% of the worldwide market of blood pressure monitors. Tests have shown that wrist BP monitors are as accurate as upper arm models if they are used on an artificial arm. However, because arteriosclerosis is reflected more on the wrist than on the upper arm because of the narrowing of the arteries, they tend to give more erratic readings on elderly patients. For medical diagnosis purposes, it is better to use an upper arm device. However, wrist machines are particularly useful for obese patients and also for day-to-day monitoring.

Features to look for in a blood pressure monitor for you or for your patients:

- A validated device: Any device you recommend for your patients should be independently validated according to one of the international accuracy validation protocols such as the BHS, ESH, ISH, AAMI, etc. Please note that the fact that a blood pressure monitor is CE marked (European Community) has nothing to do with it's accuracy.

- Backup service is probably the most important criteria when selecting a blood pressure monitor. A good quality blood pressure monitor should have at least a two-year warrantee and the company should always be set up and able to offer direct service to the end-user.

- The right cuff size is very important. Standard international size for cuff is 22 to 32 cm. Any good manufacturer should also offer the next size up of 32 to 42 cm as an optional extra. The new generation of cuffs available from most top manufacturers are latex free because of growing concerns in the medical profession about latex allergies.

- A new generation of devices connected to smartphones is also now available. The fact that they are connected to a smartphone and run by an application means that it is easier for the user to track, manage and share his results.

Sustainable Health

Home blood pressure measurement allows patients to take an active role in their health care and allows people to find out what is regrettably often denied to them… The freedom to accept responsibility for themselves.

Connected Health

Track, manage and share your vital signs

Section 3

Questions regarding technology and products

Question 26: How do electronic blood pressure monitors work?

Answer: Most electronic blood pressure monitors perform the measurements by applying the so called 'oscillometric method'. This method has been the standard worldwide for over thirty years and is also the technology used in hospitals every day, whenever the patient's blood pressure needs intensive and highly accurate control. In the oscillometric method, the blood pressure is detected by analysing the pressure oscillations that can be measured during the deflation period of the cuff pressure. This technology does not require a microphone or a stethoscope.

Question 27: What is "Fuzzy Logic"?

Answer: "Fuzzy Logic" is now an accepted standard of the medical industry where the technical components of your blood pressure monitor are controlled by a microprocessor. The main benefit for the home-user is an automatic detection of the approximate systolic value so that the device always inflates the cuff to the optimum level. This technology also enables a better repeatability of blood pressure measurements because it makes it easier for the user to measure his blood pressure.

Question 28: If my cuff is dirty or damaged can I fit any other cuff to my monitor?

Answer: Most manufacturers would like you to believe that their cuffs are unique and specially designed for their specific monitor. The fact is that most manufacturers buy their cuffs from the same suppliers and that most of the cuffs are interchangeable if the size is correct. This having been said, there are cuffs out there that are of much better quality and design than others. These are the cuffs that are sold with good quality validated devices. These are the cuffs that you should use. If you put a cheap and nasty cuff on an excellent device, you will get cheap and nasty results. A similar parallel would be that of the car industry where you repair your car with pirated parts. Your car might work, if you're lucky... but it is never a good idea long term to do this. Rather use the correct material. Any serious manufacturer of blood pressure devices will offer spare cuffs anyway.

Question 29: Can I wash the cuff?

Answer: No, generally, the cuffs of home monitors are not designed to be washed. This might change the cuff dimensions and lead to a loss in accuracy. But under normal use it is not necessary to wash the cuff. Spots on the cuff can be removed carefully with a damp cloth and soapsuds. Many cuffs for home monitors are now made from a vinyl material that is easy to clean. The bladders for home-monitors are also mostly latex-free. There are some cuffs that are specially designed to be decontaminable, but these are normally used only be hospitals and doctors in intensive care units. If your cuff becomes dirty for whatever reason, most serious manufacturers will be able to sell you a replacement.

Question 30: How long will my cuff last?

Answer: The weakest part of the cuff is the Velcro®, which is normally good for about 10000 openings and closings. This means that you could measure your blood pressure 3 times a day, everyday for nearly 10 years using the same cuff before it was worn out.

Question 31: I already have an AC/DC adapter at home, can I use it or do I need a specific adapter?

Answer: Every manufacturer uses specific power configurations. Although most upper arm monitors use 6V of current voltage, they might use different amperage. You can try and hunt one down that has exactly the right specs, but it's normally easier to simply buy the one recommended by the manufacturer.

Question 32: Can I use rechargeable batteries?

Answer: Rechargeable batteries generally give disappointing results because a blood pressure monitor requires a relatively high voltage. You might only get a few readings out of a fully charged set of rechargeable batteries before they need to be recharged. Users of rechargeable batteries have to charge the batteries very often, which does not motivate them to frequently perform home measurements.

The power supply does not have any influence on the accuracy. If the power level is too low, a low battery signal is shown on the display. As long as the device performs measurements, they are reliable (if you have a good device).

Question 33: I used my blood pressure monitor to go running because I wanted to use it to check my pulse, but it kept showing "error". What's wrong? It does measure the pulse, doesn't it?

Answer: Yes, an electronic blood pressure monitor also measures the pulse, but it will only work under quiet relaxed conditions. It is not a cardio-frequency meter, which works on a different principle. Most modern blood pressure monitors measure the blood pressure and pulse using the "oscillometric" method. This method requires quiet conditions. Any movement, vibration or shaking will significantly interfere with the measurement. This is why you permanently get error messages when measuring during your exercise routine.

Question 34: I have diabetes; will this affect my blood pressure?

Answer: Yes; it is primordial for people with diabetes to regularly monitor their blood pressure, as vascular failure is the most important mortality factor for people with diabetes. So it is important not only to monitor your blood pressure, but also to ensure that it stays as low as possible.

Thanks to MedActiv, I'm on the train to visit my grandma...

The new iCool Prestige keeps your medication at the perfect temperature.
Compact, portable and lightweight...
Perfect for travel.

MedActiv products empower people to make life-changing choices.

medactiv
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MedActiv

Solutions for managing your diabetic life...
www.medactiv.com

Diabetes and hypertension

The importance of recognising the link between hypertension and diabetes control

The United Kingdom Prospective Diabetes Study (UKPDS), the largest clinical diabetes trial ever conducted, has found that patients with both Type 2 diabetes and hypertension who tightly control their blood pressure reduce by over 30% the risk of strokes and death from long-term complications of diabetes, and that aggressive blood glucose and blood pressure control will significantly reduce mortality rate in type 2 diabetics.

Blood Glucose: A Continuous CHD Risk Factor?

Coronary heart disease is responsible for almost 60% of the deaths in people with diabetes. They have a two to threefold increased risk for coronary heart disease and two to four-fold higher coronary heart disease morbidity and mortality rates. In people with diabetes, coronary heart disease occurs at a younger age. Even in the presence of normoglycemia, an increase in cardiovascular risk is observed as the glucose increases. It is now a recognised fact that glucose is a continuous cardiovascular risk factor, similar to hyper-cholesterolemia and hypertension.

The Answer, Tight Blood Pressure Control

The goal of treating arterial hypertension in diabetic patients is to prevent death and disability associated with high blood pressure. In addition, other reversible risk factors for cardiovascular disease, seen so frequently in hypertensive diabetics, also need to be addressed.

The optimal goal of blood pressure control in diabetics has not been established, but there are indications that it should be lower than the 130/85 mmHg systolic/diastolic pressure recommended by current guidelines. In the presence of multiple associated risk factors, most guidelines suggest a threshold for intervention of 140/90 mmHg. In particular, in hypertensive diabetic patients intervention must be early and aggressive.

Diabetes/hypertension: bad companions

Most patients with Type 2 diabetes die from vascular disease. The UKPDS has reinforced the importance of aggressive management of blood pressure in preventing vascular complications of Type 2 diabetes. Diabetic patients with myocardial infarction have a two to threefold higher mortality than do their non-diabetic counterparts. The most important factor for this is increased left ventricular failure, which may be due to a “diabetic cardiomyopathy” that is not related to the arteriosclerosis. Another possible factor is the higher prevalence of silent ischemia that can lead to delayed diagnosis of CHD in people with diabetes. Diabetic patients with myocardial infarction also have worse long-term prognosis than do their non-diabetic counterparts.

High blood pressure is twice as frequent in diabetics compared with the general population, and often precedes and contributes to the development of diabetic nephropathy. The goal of treating arterial hypertension in diabetic patients is to prevent death and disability associated with high blood pressure. In addition, other reversible risk factors for cardiovascular disease, seen so frequently in hypertensive diabetics, also need to be addressed.

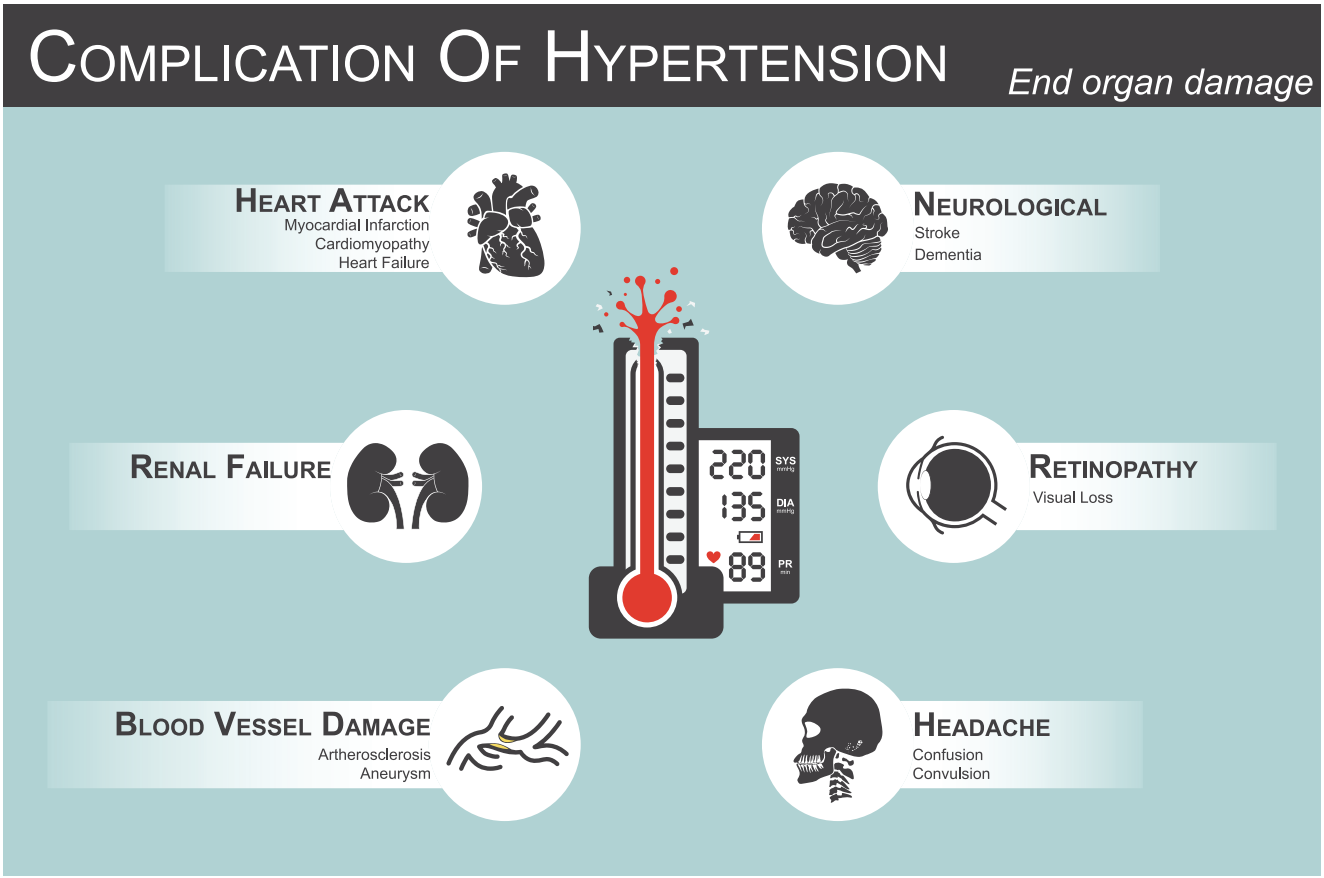
Aggressive control of blood pressure may have beneficial effects on microvascular complications equal to or greater than that of tight glycemic control.

Further, the beneficial effects of improved blood pressure control extend to cardiovascular and stroke events, which occur with much greater frequency (and with greater morbidity and mortality) than microvascular complications in elderly diabetic patients. Aggressive control of blood pressure should be a high priority in the management of hypertensive diabetic patients.

Responsibility starts at Home!

People with impaired glucose tolerance have a higher risk for coronary heart disease. Even in the presence of normoglycemia, an increase in cardiovascular risk is observed as the glucose increases. It is now a recognised fact that glucose is a continuous cardiovascular risk factor, similar to hypercholesterolemia and hypertension and that intensive insulin therapy following MI in diabetic patients reduces mortality.

Take a global approach to prevent coronary heart disease. Teach your patients about sustainable health. Teach your patients to take 60 seconds out of their daily life to check their blood pressure.



Question 35: My doctor says that I have an arrhythmia (irregular heartbeats) and therefore I shouldn't use an electronic blood pressure monitor. Is he right?

Answer: It is only in severe cases of arrhythmia that the oscillometric method doesn't work. Everybody skips a heartbeat or has an irregular heartbeat every now and then, which is nothing to worry about. However, your doctor may be right; if you have severe arrhythmia, a normal oscillometric home monitor should not be used. Nowadays most blood pressure monitors integrate a new technology called IPD (Irregular Pulse Detection), which is an early warning system for arrhythmia. If you see the IPD symbol on the LCD of your blood pressure monitor, you should mention it to your doctor, as it will give him an early indication of a possible arrhythmia. The problem is that when you go to the doctor for your normal consultation, your arrhythmia might not be detectable at that moment. This is the advantage of IPD. If you measure your blood pressure every day, you will have a much bigger chance to detect early cardiac problems and nip them in the bud.

Incidentally, many doctors discredit digital blood pressure monitors because "they cannot be used on a patient who has an arrhythmia!". Just for your information, in is not possible to accurately determine the blood pressure of a patient with arrhythmia USING ANY METHOD! The doctor's stethoscope and aneroid or mercurial monitor is completely useless in cases like this.

The complications due to uncontrolled hypertension are untold: heart attacks, neurological damage, renal failure, retinopathies, blood vessel damage. Take care of your heart...

"The best and most beautiful things in the world cannot be seen or even touched - they must be felt with the heart."

Helen KELLER

Question 36: I have to control the pulse rate of my cardiac pacemaker very accurately. Can I use the pulse result of my blood pressure monitor for this?

Answer: No, it would be a very bad idea to do this... Most electronic home monitors measure the pulse oscillations over a period of less than one minute and then extrapolate the pulse. Accurate pulse controls such as required to control a cardiac pacemaker require a period of 60 seconds or more. Electronic devices are therefore not suitable for this use.

Question 37: I'm going hiking this weekend; can I use my blood pressure monitor in the high mountains where the atmospheric pressure is lower?

Answer: Yes... Every time a digital blood pressure monitor is switched on, it re-calibrates itself to the atmospheric pressure. The internal pressure is adjusted to the environmental pressure level. So yes, you can measure your blood pressure anywhere you want, provided of course that you follow the normal instructions.

Question 38: Can a digital blood pressure monitor be used in a driving ambulance, an airplane or a train?

Answer: Most digital blood pressure monitors use the "oscillometric method" for measuring blood pressure. This method requires quiet conditions. Any vibrations or shaking that appear in an ambulance driving at full speed can interfere with the measurement. However an airplane or train should present no problem, depending on the level of vibrations. If there are too many vibrations you might get an error message instead of a reading and you might have to repeat the reading, but the accuracy should not be affected.

Question 39: I heard that some devices measure during inflation and some measure during deflation. Which method is more accurate?

Answer: At the moment most devices out there are using the deflation method, where the blood pressure is measured during deflation of the cuff. But in the last few years the new generations of devices are measuring during inflation. Both methods are clinically validated so there are no medically proven differences in terms of accuracy between inflation mode, where the blood pressure is measured during inflation, and deflation mode.

Inflation mode is certainly quicker and more comfortable than deflation, which means that the patient is less stressed and he might get better results.

Question 40: What is the life expectancy of a digital blood pressure monitor?

Answer: Good quality modern blood pressure monitors are designed for a long product life. The important components are very carefully protected. The most "fragile" component of a blood pressure monitor is the pressure sensor which on average has a life expectancy of about 16 000 readings, which means that you could take your blood pressure 3 times a day every day for about 14 years, so you should be fine.

The electrical pump inside the monitor should be good for about 30 000 readings. Of course, these specifications are only valid if the blood pressure monitor is used in the correct way. If you drop the device, you might cause an electrical or mechanical failure, but this is generally not part of the guarantee.

The only “consumable” part is the cuff, which you might have to replace every few years, because it will only be usable for 10 000 readings.

Generally, if you have been using a blood pressure monitor for 3 years, you should consider replacing it with a new one. Not because your old one isn’t good anymore, but simply because technology is now moving incredibly fast and the devices are getting better every year. A good analogy would be that of computers, where a computer today is not at all comparable to a computer from three years ago.

We also recommend that you have your device checked and calibrated by the manufacturer every two years, even if there is nothing wrong with it. This will allow the manufacturer to check the device, to clean it and to measure the life expectancy of your monitor.

If you follow the instructions carefully and take care of your device, it will probably last “for ever”. However, as mentioned above, an old device is not comparable in terms of accuracy and comfort to a new device.

Question 41: Is my blood pressure monitor waterproof?

Answer: No! And neither is your hi-fi at home or your computer. Your blood pressure monitor is a sensitive piece of medical equipment that must be treated with a great deal of respect. Please do not wash it, microwave it or use it in your sauna. Please do not use it in temperatures exceeding 50°C.

Question 42: If I travel with my blood pressure monitor, can I have it serviced in another country?

Answer: Yes, if you have a reputable brand you normally will find an authorised distributor in most countries. Simply log on to the website of the manufacturer and you should be able to find a local distributor. If you have bought a cheap and nasty blood pressure monitor from the Shanghai Scrap Plastic Corporation for 5 dollars, you cannot expect to get international services policies; but this stands to reason...

I want to touch the heart of the world and make it smile.

Charles de Lint

Section 4

Medical questions

Question 43: What is normal blood pressure and when should I see a doctor?

Answer: It is recommended that you record your blood pressure values frequently and discuss them with your doctor. If your systolic values are frequently above 140 and/or the diastolic values above 90, you should consult your doctor. It is normal that blood pressure values are sometimes higher or lower and there is no need to worry if the results are sometimes higher than the above limits. But if your pressure is above the limits in most cases, you should consult your doctor.

When the blood pressure is measured, it should ideally fall within a specific range. Knowledge of this range and of your blood pressure should allow you to better manage your health.

In general, it is better to have a lower blood pressure than a high one. With high blood pressure, the heart works harder, your arteries get damaged and your chances of a stroke, heart attack, or kidney problems are greater.

Your blood pressure fluctuates greatly in the course of a day. Many factors, such as exercise, conversation, alcohol, stress, movement, food or smoking can cause your blood pressure to rise and fall temporarily. This is why it is important to always measure and record your blood pressure at the same time and under the same conditions every day (see question 42) and to be completely relaxed when you measure your blood pressure.

About one person out of three has high blood pressure (hypertension), which requires regular monitoring either by medical personnel in the office or at home by the patient or a family member. Home blood pressure monitoring is recommended both for the initial diagnosis of hypertension as well as for the evaluation of the response to treatment. Home monitoring also has potential value in assessing resistant hypertension, hypotensive symptoms associated with medication, and autonomic neuropathy. Home blood pressure measurement offers several benefits. It allows patients to take an active role in their health care, it reduces health care costs, and it can reduce the incidence of “white coat hypertension”.

Responsibility starts at Home!

Take 60 seconds out of your daily life to check your Blood Pressure.

Question 44: What is “White Coat Hypertension”?

Answer: One of the main factors for different readings at the doctor’s office and at home using a home monitor is that the conditions for measuring blood pressure at the doctor’s office are not ideal. To accurately measure your blood pressure, you should consciously relax for at least 5 minutes before taking your blood pressure. You should also take it at the same time of day as your last reading if you want to compare them. At the doctor’s office, you might also suffer from what is called “white coat hypertension”, where you are nervous and this causes the blood pressure to rise temporarily. It is now a given fact that measurement of blood pressure at home, also called HBPM (Home Blood Pressure Measurement), **IS MORE REPRESENTATIVE OF THE PATIENTS REAL BLOOD PRESSURE** than the casual blood pressure taken at the doctor’s office. This is provided of course that the patient uses the device correctly.

White Coat Hypertension is the popular name for the effect that a patient’s blood pressure might be higher when the measurement is performed by a doctor (in his typical white coat) or a nurse. This effect is caused because one is often nervous during such “official” measurements and the pressure will be accordingly

The new generation of connected devices allows the patient to measure his blood pressure at home and to automatically send the results to his doctor or family.

higher. The main problem is that a person may not have a pressure that is too high under normal conditions but might be diagnosed as hypertensive based on the doctor's measurement. Home devices are the best choice to prevent this "white coat effect". Some long-term studies have shown that people who have a higher pressure at the doctor also have a higher risk to develop hypertension. Thus, these patients should check their pressure frequently.

The misdiagnosis of hypertension and subsequent treatment increases costs, and it burdens the patient with an inaccurate label. Home blood pressure monitoring, when used properly, provides more accurate blood pressure readings than single measurements taken by doctors in their practices. In addition, it involves the patient in his or her care leads to better compliance with drug therapy and lifestyle changes.

Question 45: Does blood pressure depend on age?

Answer: In an average population, blood pressure does tend to go up with age due to reduced blood vessel elasticity. However, there are many elderly people who have excellent blood pressure, and age is often used as an excuse for high blood pressure and is not properly treated. "It doesn't really matter, he's 76 years old and his blood pressure is pretty good for his age" is the kind of thing that is often heard in the doctor's cabinet.

Although this is true in many cases, each and every case of hypertension should be reviewed and treated according to the etiology of the disease and according to the circumstances surrounding the development of the hypertension. If the patient understands the risks, they can greatly reduce their chances of a fatal heart attack. 73% of the risks that cause heart disease can be avoided! Even in elderly populations, the blood pressure should not frequently move above 140/85 mmHg.

Vegetables, fruits and dairy products are high in electrolytes and naturally occurring minerals such as potassium, magnesium and calcium. A diet low in total fat, saturated fat, and cholesterol, but high in fruits, vegetables, fibre and low-fat dairy products can lead to a quick drop in blood pressure and also often eliminates the need for blood pressure medication.

Recommended fibres include seeded foods like brown rice, buckwheat, millet and oats amongst others. Also recommended are plenty of raw fresh fruits and vegetables, such as apples, asparagus, bananas, broccoli, cabbage, raisins, squash, and sweet potatoes. These contain potassium, which lowers blood pressure.

Other supplements that might help include calcium, magnesium, garlic, Vitamin C and amino acids taurine and argine, used by the body to make nitric oxide which causes the blood vessels to dilate.

Avoid foods such as aged meats and cheeses, anchovies, avocados, chicken liver, chocolate, pickled herring, sour cream, sherry, wine, yoghurt, bacon, corned beef, pork sausage, smoked or processed meats and rich gravies.

But there are many other factors affecting your blood pressure and they should all be taken into account if and when you have a blood pressure problem.

If you're overweight, you should

eliminate those extra pounds. Losing weight can often cause the blood pressure to drop dramatically. Exercise is a good way to control weight and reduce anxiety, and relaxation techniques may help you control stress, all of which can help get your blood pressure under control. For people who are 15 percent over desirable body weight, an average weight loss of five kilos can reduce systolic blood pressure by 4 mm and diastolic by 2.5mm. The results are more dramatic in those who lose more weight.

High blood pressure can be of emotional origin. It can be caused by stress, worries, fear, and pressures from competitive life, or prolonged nervous stress. These underlying causes of emotional origins must be removed before any nutritional or biological treatments can be successful.

Correct What Can Be Corrected…

Salt: Salt is often blamed as the biggest culprit for hypertension and many people believe that by simply cutting out the salt that they sprinkle on their food, they are doing wonders for their health. In fact, the quantity of salt that you sprinkle on your food is so negligible that it will make little or no difference to your blood pressure. It is not just salt that is to blame, but rather SODIUM, which people eat most of the time without realising that it is present ubiquitously in most daily prepared meals. Lowering your salt intake alone is not enough. You must eliminate all sodium from your diet! You can do this by carefully reading all labels from processed foods and avoiding those that have the words, “soda”, “sodium”, or the symbol “Na” on the label. These indicate that the product contains salt. Some foods and food additives that should be avoided on a low-salt diet include: monosodium glutamate, baking soda, canned vegetables, commercially prepared foods, diet soft drinks, food with mold-inhibitors, preservatives, most sugar substitutes, meat and soy sauces.

Lower your intake of caffeine and sugar. There may also be food allergies that can increase blood pressure. If you have an unexpected surge or change in blood pressure patterns, exhaust this avenue before rushing to take pills. Have yourself checked for allergies. Be aware of the limitations of your body. For all you know, changing your diet to a non-allergenic one will make the problem disappear.

Get Active: Regular aerobic exercise can lower both systolic and diastolic blood pressure by approximately 10 mm in those with mild hypertension. For those of you who already have high blood pressure, be careful not to over do it. Do exercises that require stamina and not strength.

Stop at Two Drinks: For people who drink, this is the first thing to do. Having 3 or more alcoholic drinks a day accounts for as much as 11 percent of all cases of hypertension. The good news is that the effect of alcohol on blood pressure is temporary, lasting just three or four days. However, if you drink every day, you can just imagine that the effect on your blood pressure will be constant.

On the more esoteric side, there are many alternatives to hypertension drugs. Acupuncture appears to lower blood pressure by stimulating the brain to release morphine-like chemicals known as endorphins. Acupuncture may also be useful in some patients with chest pain due to coronary artery disease. Many eastern-based beliefs and rituals such as yoga, Reiki, meditation and Tai Chi will have a very positive effect on mind and body health and will also help to prevent a number of cardio-vascular complications. However, nothing will help as much and is as easy as a healthy diet and lifestyle.

Small Drop = Large Benefit

A small change could make a huge difference. If all hypertensives achieved a 2-point reduction in blood pressure through life style changes, incidence of strokes would decline by about 15 percent, and coronary heart disease events would drop by 6 percent. This would prevent as many of these events as does treatment of hypertension with drugs.

It’s also very important to check your blood pressure regularly to determine if your self-help techniques are effective. Remember, if you have high blood pressure it is important to be under the care of a doctor and follow your treatment program faithfully. Monitor your blood pressure daily the first thing in the morning (before coffee) and again after the most active part of the day. Record the readings - be sure the blood pressure monitor is accurate. When the blood pressure is low enough (this may take a year), return to your doctor with the log. If he’s willing to try to get you off medication, drop the medication gradually and monitor the blood pressure daily.

Question 46: Is it true that blood pressure is mainly measured with the “oscillometric” technique? What does this mean?

Answer: In a doctor’s practice or hospital, blood pressure is commonly measured with the conventional “sound method”. Heartbeats (what the doctor refers to as “Korotkoff sounds” are listened to with a stethoscope. These sounds in the blood stream occur in the arteries of the upper arm when the pressure in an inflated blood pressure cuff is slowly released. The first audible beat indicates the systolic

blood pressure; the last audible beat indicates the diastolic pressure. Blood pressure measurements are read off a mercury column (or an aneroid dial) and are for that reason are historically given as millimetres of mercury (mmHg).

Oscillometry uses a different measurement principle. Most of the presently available devices for self-measurement use this method. Electronic microprocessors in oscillometric devices calculate blood pressure from the pressure fluctuations (oscillations), which occur in the cuff due to the pulses in the blood stream. As beats are not relevant in this method, neither a stethoscope nor a microphone (integrated into the blood pressure cuff) are necessary. The blood pressure and pulse rate values can be read from a digital display at the end of measurement. Blood pressure is historically expressed in mmHg, or millimetres of mercury, even though there is no longer any mercury used in electronic devices.

It is interesting to note that in most French speaking countries, blood pressure is expressed cmHg, or centimetres of mercury, which means that the doctor would express your blood pressure as 12/8 (twelve over eight) instead of 120/80.

Question 47: What else should I think about when I take my blood pressure?

Answer: Hypertension is not a headache where you can simply take a pill and make it go away. Hypertension is a battle against compliance. There are many things to remember and do if you truly want to "manage" your hypertension.

- You should regularly measure your blood pressure at home. This gives your doctor valuable info about the changes in your blood pressure.

- You should record the measurements in a blood pressure record book and also note down any other observations such as: feeling unwell, dizziness, disrupted sleep, forgotten to take medicine, etc.

- Always take your blood pressure under similar conditions at the same time of day. It has no meaning at all to measure your blood pressure one day at 08:00 in the morning and the next day at 12:00 and to compare the results. Your blood pressure profile goes through a 24-hour clock, with peaks and lows so it is important that you compare measurements from similar times of the day.

- You should also always sit in the same position and use the same arm.

- You should not drink coffee or alcohol and you should not smoke before a measurement. Take your blood pressure measurement after a five-minute rest, sitting and in restful surroundings.

- Make sure that the measurement is taken at the level of the heart if you use a wrist device.

- Compare your measurement with that taken by your doctor.

- Have your machine checked and calibrated at least every two years.

The future started here

The 1909 Pachon Oscillometer heralded a new era in medical diagnostics, when it introduced simultaneous blood pressure measurements in different parts of the body

Question 48: Can I use a wrist device to manage my blood pressure?

Answer: Wrist machines are perfect for home monitoring if they are used correctly. Because they are small and easy to use, they are used much more

often than upper arm monitors and the user actually gets a much better idea of the progression of his blood pressure. However, finger devices, which measure blood pressure and pulse rate on the index finger, frequently give faulty readings. This occurs, for example, if the index finger is not held steady at the height of the heart or if the small terminal branches of the arteries (arterioles) are constricted due to cold fingers, as a result indicating too low a blood pressure.

Question 49: Is it possible for my blood pressure to drop too low due to treatment?

Answer: Blood pressure may sometimes drop very low due to treatment. This can lead to dizziness when standing up quickly or bending down, extreme tiredness and lack of energy. If you notice these typical symptoms of too low a blood pressure (hypotension), you should talk to your doctor about a possible adjustment of the treatment.

However, if you have low blood pressure without any problems, no changes to treatment are necessary.

The over-prescription of medication is often due to "white coat hypertension", where the patient is nervous at the doctor's office and as a result his blood pressure is higher, which means the doctors often prescribes unnecessary medication.

Home Monitors may be best medicine for hypertension.

Millions of people taking medication for high blood pressure have the problem in only one place - the doctor's office.

A recent study found that 26% of persons diagnosed as mildly hypertensive based on doctor's tests had no evidence of hypertension when 24-hour ambulatory recordings were obtained. Doctors often introduce errors due to sensory impairment (difficulty hearing Korotkoff sounds or reading the manometer), inattention, inconsistency in recording Korotkoff sounds, and subconscious bias (e.g., digit preference for numbers ending with zero or preconceived notions of normal pressures).

The patient can also be the source of misleading readings due to posture and biological factors. Posture (i.e., lying, standing, sitting) and arm position in relation to the heart can affect results by as much as 30 mmHg. Biological factors include anxiety, meals, tobacco, temperature changes, exertion, and pain. Due to these limitations, it is commonly recommended that hypertension be diagnosed only after more than one elevated reading is obtained on each of three separate visits. This is a practice that many doctors do not follow.

Question 50: Are side effects to be expected with drug treatment?

Answer: At the beginning of your treatment, a medication may temporarily trigger a physical or mental reaction, with tiredness, dizziness and difficulties in concentration if your blood pressure drops too quickly. Generally, the body gradually gets used to the new lower level of blood pressure and the problems disappear with time. However, a few people taking a particular hypertension medicine have continuing side effects. There are also side effects that are typical of a certain types of drug, which cannot be avoided by reduction of the dosage. An example of this is the troublesome, but harmless dry cough, which may be contracted by those taking an ACE inhibitor. If the cough is very disturbing, the doctor may switch to another drug such as an angiotensin II antagonist.

Skin disturbances, such as itching or rashes, also require a change of drug. With calcium blockers, the following harmless side effects have been observed:
Headaches, facial redness, swollen legs and ankles (oedema), as well as constipation. The most commonly reported side effects of beta-blockers include tiredness, potency problems, cold feet and hands. Low calcium levels in the blood, gout attacks and muscle cramps are possible side effects of diuretics. The best-tolerated drugs at present are the angiotensin II antagonists.

Question 51: Can I stop taking medication due to side effects?

Answer: NO!!! Your blood pressure monitor is not intended to replace regular medical examinations. It is there to be used together with your doctor as a tool to better manage your blood pressure. Only a physician is qualified to interpret changes in your blood pressure.

You would be unwise to neglect blood pressure treatment even if you have side effects. You should rather discuss any side effects immediately with your doctor. It is usually possible to improve tolerance by switching to a reduced dosage, changing to a different preparation or changing from a single drug therapy to a combination of two drugs. Never change your medication or reduce its dosage without consulting with your doctor.

Question 52: During the weekend, I'm relaxed and my blood pressure is lower. Can I stop taking medication at the weekend or on holiday?

Answer: You must continue taking your medication, since as soon as you interrupt the treatment, your blood pressure will increase. When flying, it is advisable to take your medication in your hand luggage, in case your luggage is lost. For overseas trips, it is best to ask your doctor when you should take your medication, due to time differences.

Question 53: Can I stop taking medication when I feel relaxed?

Answer: Nervous stress and tension, which temporarily push blood pressure higher, are normal and not to be confused with high blood pressure. Your doctor has diagnosed you with high blood pressure, which means that he believes that your blood pressure is mostly too high when resting and not just when you are active or when stressed and under tension. You should therefore not stop taking your medication, even if you feel relaxed. Your blood pressure will otherwise again rise to the original level.

Question 54: Will I have to take my blood pressure pills forever?

Answer: Damage to artery walls and an excessive strain on the heart, brain and kidneys can only be avoided if your blood pressure is properly controlled. This requires treatment with medication over a long period if you have seriously high blood pressure and it has not been possible to reduce your blood pressure to a value of 135/85 mmHg.

Changes in lifestyle and the removal of risk factors can have an enormous positive effect and frequently allow the dosage of medication to be lowered after some time.

Question 55: The medication has led to a potency disorder. What can I do?

Answer: The extent and speed of blood pressure reduction, as well as the preparation used can have an influence on potency. Drugs such as beta-blockers and diuretics can lead to potency disorder side effects sooner than calcium ant- agonists, ACE inhibitors and angiotensin II antagonists. If you are suffering of potency impairment due to your blood pressure medication, please discuss it with your doctor. He may be able to reduce the dosage or switch you to a different medication.

Apart from medications, there are other factors that are relevant, such as age, physical and mental state, alcohol and nicotine consumption, as well as accompanying illnesses like diabetes.

Question 56: Are there unsuitable sporting activities if I have high blood pressure?

Answer: When you have high blood pressure, the small terminal branches of the arteries (the arterioles) are constricted and this raises resistance to circulation of the blood in your arteries. Muscle movement requires more oxygen-rich blood and thus causes a widening of the arterioles. Regular stamina training such as walking, jogging, cycling, skiing, swimming or dancing has a good effect on high blood pressure. You should try to do this for at least 30 minutes a day.

However, sporting activities that mainly strain the muscles without a regular movement are unsuitable. This type of sport, such as weightlifting, can cause a sudden sharp increase in blood pressure that could be very dangerous.

Hypertension, diabetes and erectile dysfunction

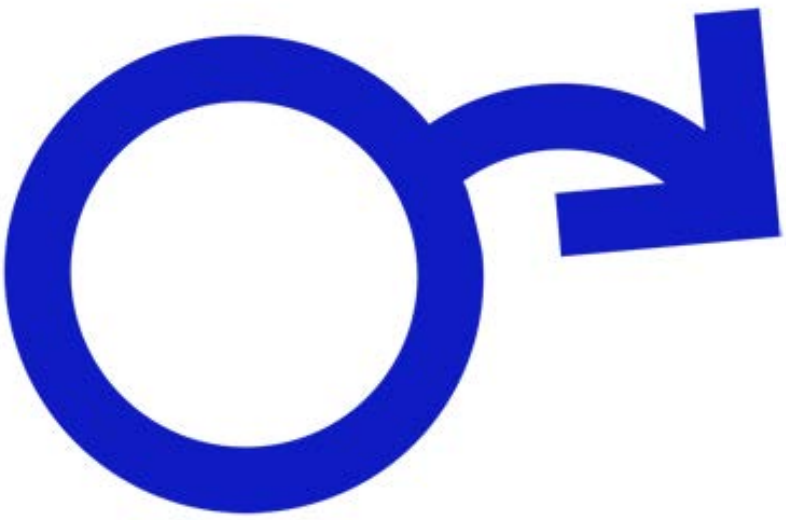
The most common cause for erectile dysfunction (ED) is impaired blood flow into the penis, which is a common result of arteriosclerosis and diabetes. In fact, in about 40% of all people over the age of 50, erectile dysfunction is caused directly by arteriosclerosis. About 50% of all people suffering from diabetes (insulin dependent) suffer from some form of erectile dysfunction.

Erectile dysfunction is defined as

the inability to achieve or maintain an erection sufficient for mutually satisfying intercourse. Erectile dysfunction impacts more than a man's sexual activity. The emotions that coincide with this condition often have a significant effect on a man's self-esteem, as well as on his relationship with his partner. Although the incidence of ED increases with age, it is not an inevitable result of ageing. For the elderly and for others, ED may occur as a consequence of specific illnesses or of medical treatment for certain illnesses.

The most frequent physical causes of ED are vascular diseases including arteriosclerosis, hypertension, hypercholesterolemia and other conditions that interfere with the blood flow to the penis. Because adequate arterial supply is critical for erection, any disorder that impairs blood flow may be implicated in the etiology of erectile failure. Some diseases associated with ED can affect both the vascular and the nervous systems. Diabetes is an example of this.

Hypertension in patients with diabetes frequently manifests certain unique and challenging properties. For example, people with type 2 diabetes often lose their normal circadian rhythm of blood pressure and heart rate. Loss of normal nocturnal drops in blood pressure and heart rate may reflect both autonomic dysfunction and/or decreased sensitivity of renal-neural sensing of volume-pressure relationships. Disproportionate elevations of nocturnal blood pressure, especially systolic blood pressure, increase the 24-hour integrated cardiovascular and renal load, are more clearly associated with albuminuria and left ventricular hypertrophy, and thus greatly increase CVD risk as well as progression of renal disease in these patients.



Diabetes results in poor circulation and/or peripheral neuropathy. When the nerves are involved sexual stimuli are not transmitted appropriately to or from the brain and ED develops.

Research has resulted in significant advances in both the diagnosis and treatment of erectile dysfunction. Physicians now understand that approximately 85% of erectile dysfunction is attributable to physical conditions while only 15% is due to psychological conditions.

Prescription medications often cause erectile dysfunction as a side effect. Many medications fall into this category including antidepressants, antipsychotics, treatments for cancer of the prostate, chemotherapy and some anti-hypertension medication, notably beta-blockers, diuretics and ace Inhibitors/ calcium channel blockers, However, as many cases of ED are caused by personal reactions to specific medications, a change of prescription to another class of medication is often all that is needed to correct the condition.

Correct What Can Be Corrected

Keeping diseases such as diabetes and hypertension under control will go far in preventing sexual dysfunction. About one person out of three has high blood pressure (hypertension), which requires regular monitoring either by medical personnel in the office or at home by the patient or a family member. Home blood pressure monitoring is recommended both for the initial diagnosis of hypertension as well as for the evaluation of the response to treatment. Home monitoring also has potential value in assessing resistant hypertension, hypotensive symptoms associated with medication, and autonomic neuropathy. It also empowers the patient to take responsibility for his or her health.

Further, the beneficial effects of improved blood pressure control extend to cardiovascular and stroke events, which occur with much greater frequency (and with greater morbidity and mortality) than microvascular

complications in elderly diabetic patients. Aggressive control of blood pressure should be a high priority in the management of hypertensive diabetic patients. It should also be a high priority in the treatment of people suffering from erectile dysfunction.

Many people have high blood pressure or glucose for years without knowing it. Hypertension and diabetes are the leading cause for penile dysfunction. The only way to tell if you have high blood pressure or high glucose levels is to perform a quick test. These tests can now be performed in the comfort of your own home using a digital blood pressure monitor or glucometre. These glucometres and blood pressure monitors are available at most pharmacies.

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For Uwe DIEGEL, creator of MedActiv, the company represents a personal investment. "In 2003, my brother almost died following an incident where his medication was accidentally frozen in a hotel. So I started this company because of reasons that are more of a personal nature than just business. MedActiv is for me the ultimate expression of innovation at the service of healthcare. If the MedActiv products are so popular, it is because they are designed by patients for patients and because we speak directly with users of the medications to really understand their needs. "

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